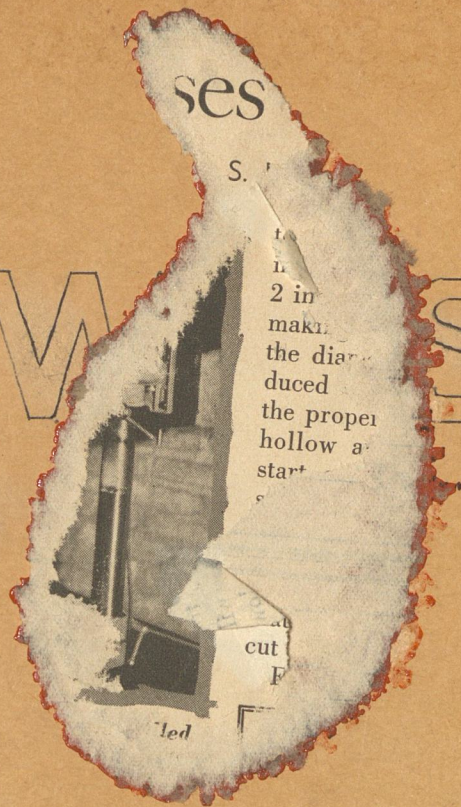


RAILWAYS



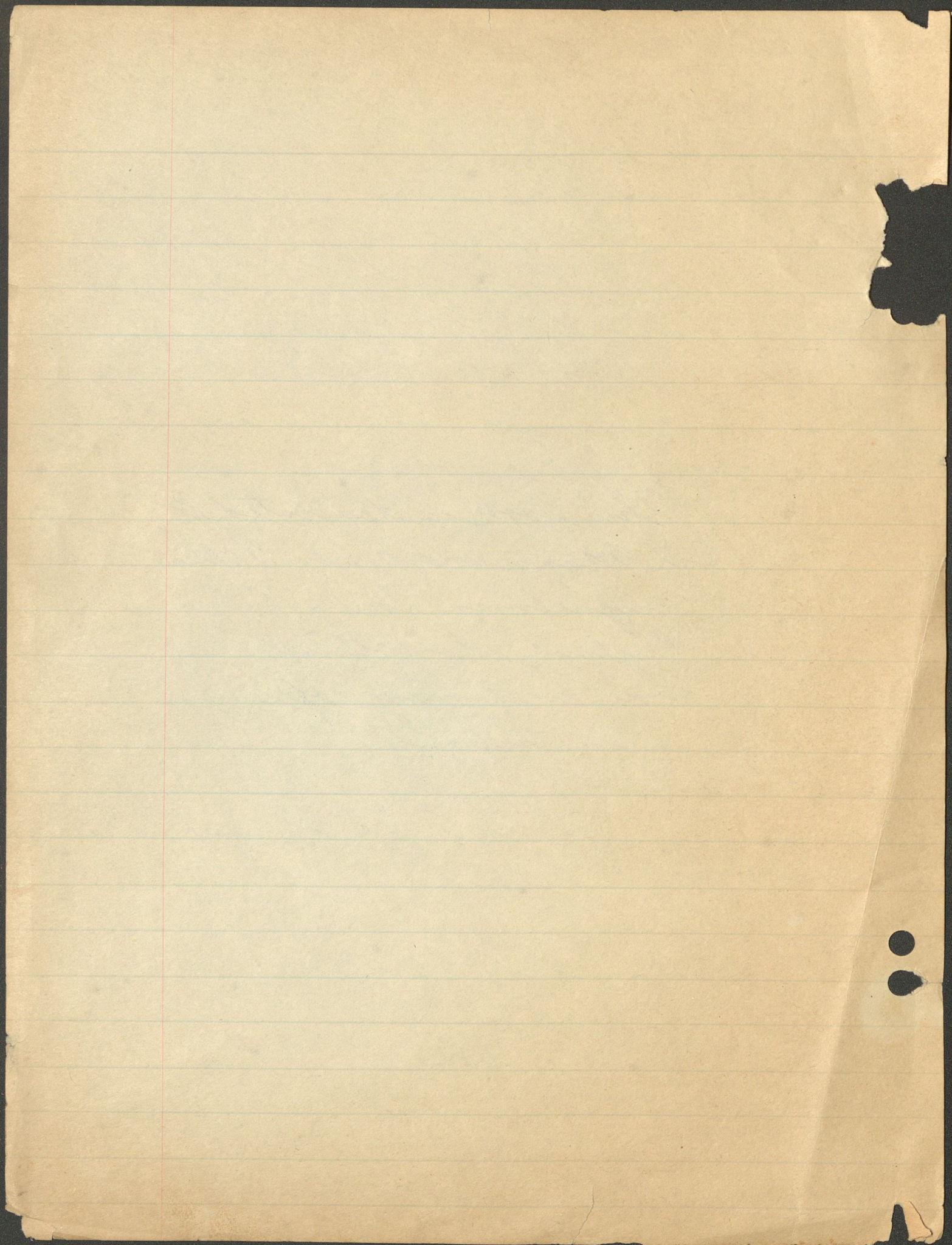
IN

GENERAL

By
Allan Youell.

This book is dedicated to
L. Mann and Norman Niles
signalman, Southern Railway
England, who both supplied
me with many of my
illustrations.

By
Allan Youell.



AMERICAN RAILWAYS

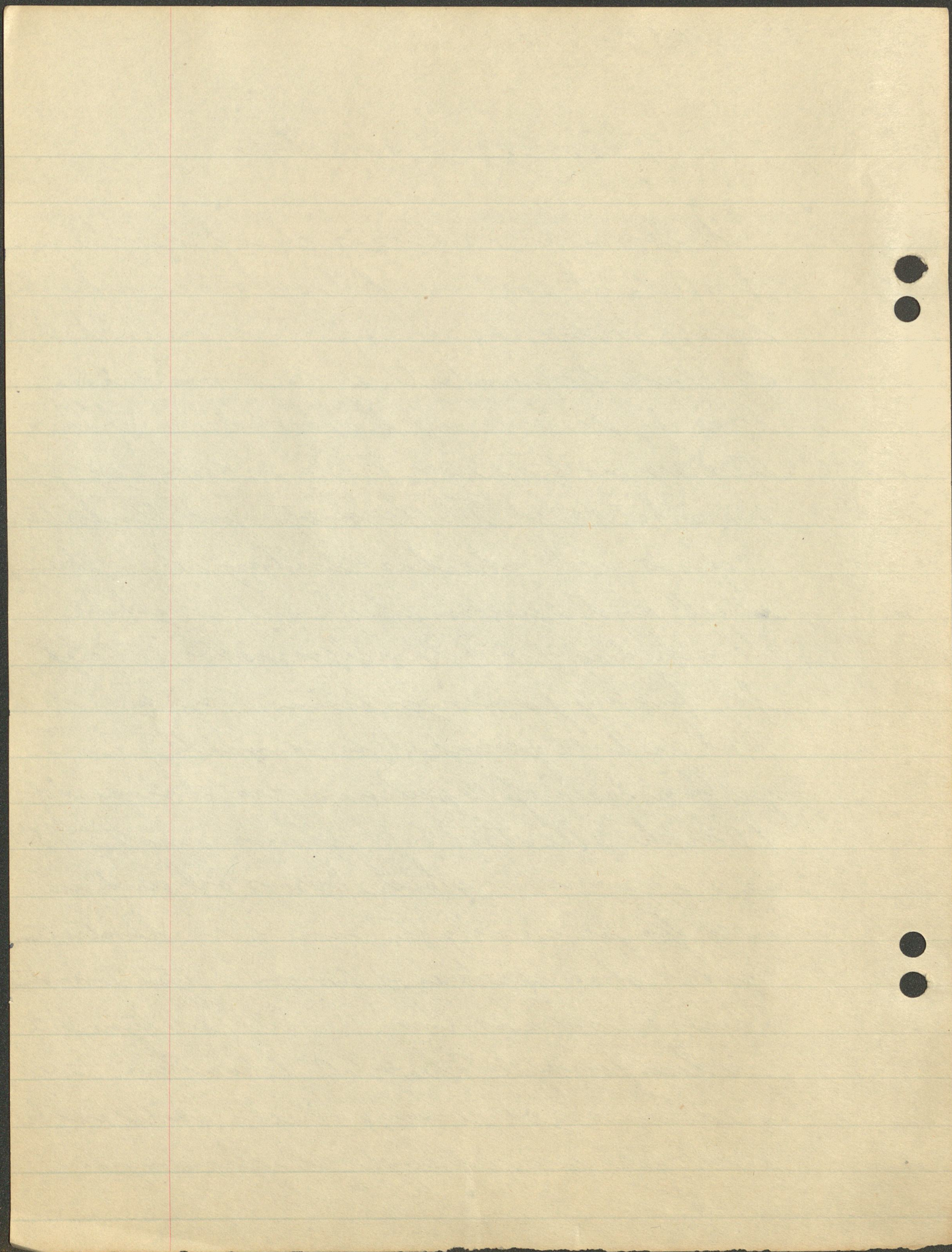


AND EQUIPMENT

Allan Yowell.

Passenger Locomotives

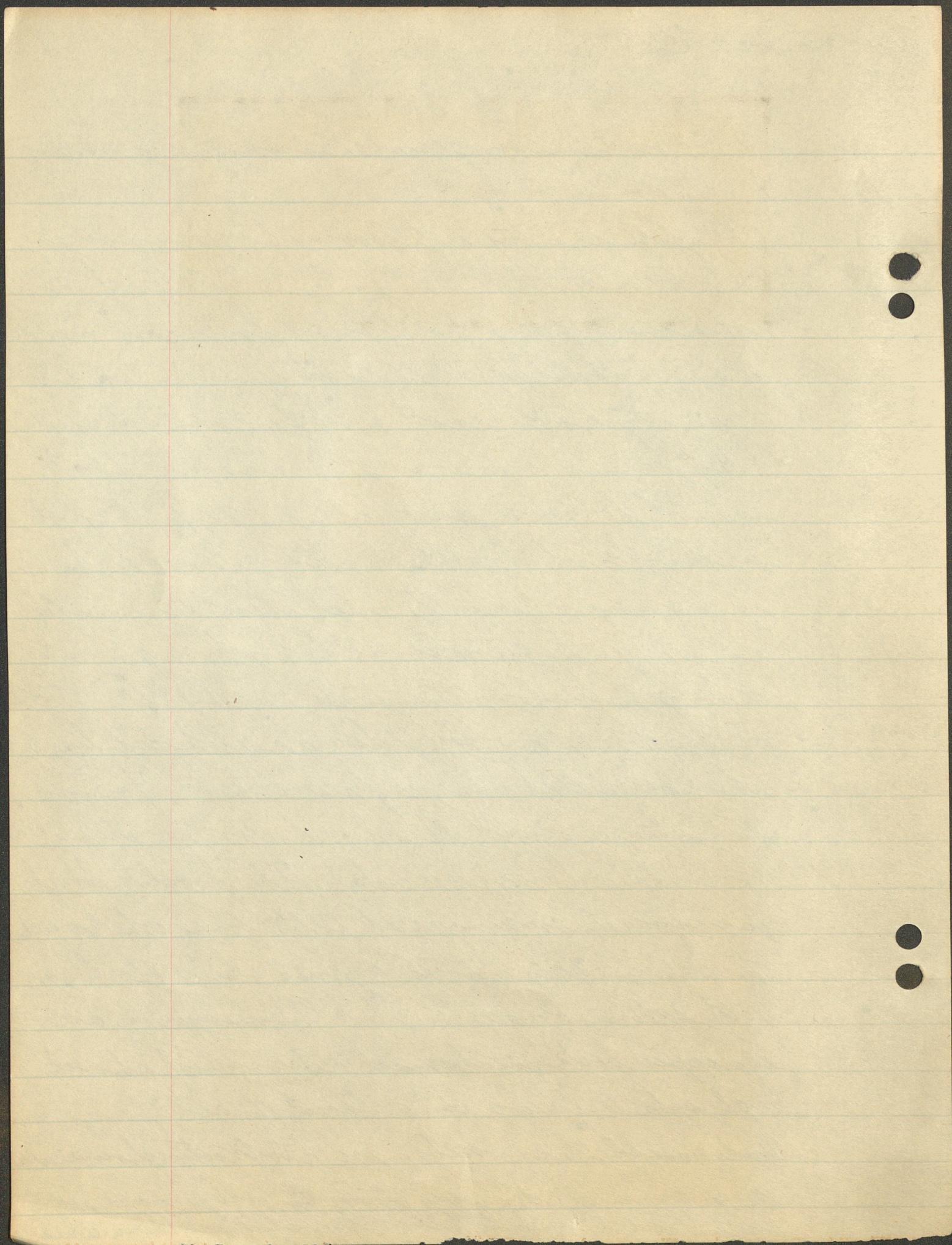
A locomotive is always classified by the number of wheels it possesses, but with no consideration to size or to any special device on it. The wheels are classified under three groupings mainly: leading, driving and trailing wheels. If there are no leading or trailing wheels, a cypher 0 is substituted. The locomotive in illustration 1, if you will note, has 4 leading wheels, 8 driving wheels and 4 trailing wheels, and would be classified as 4-8-4. This locomotive is used for hauling passenger trains over mountains but on level ground it is claimed they can pull a train of 16 Pullman cars at a speed of 80 mph. Illustration 2 shows another 4-8-4 type locomotive, which burns oil and is used for practically the same work. Illustrations 3 and 4 show pictures of two 4-8-2 type locomotives. These are more common than the 4-8-4 type, but are less powerful. These 4-8-2 locomotives have medium sized driving wheels and can be used for either freight or passenger work.



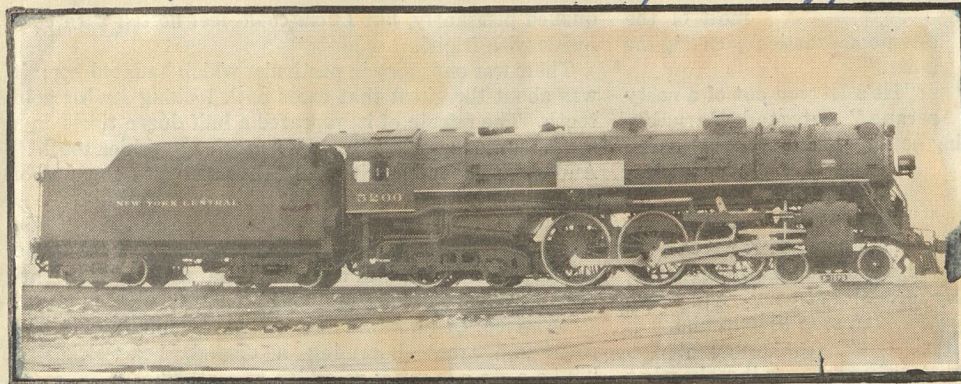
Allan Youell.

4-6-4 or Hudson Speed Passenger Locomotive

Before this type of locomotive was brought into service, the New York Central Railroad was using 4-6-2 or Pacific type locomotive to haul the Twentieth Century Limited. The 4-6-2 type were not powerful enough and what was needed, was a locomotive that would be more powerful and as fast as the said locomotive without adding another pair of driving wheels. To meet these demands a 4 wheeled bogie was added which permitted a larger firebox than the two wheeled pony truck on the 4-6-2 type. By adding a 4 wheeled bogie, which permitted a larger firebox, it was found that steam could be raised more regularly than on the ordinary locomotive. The booster, which is a separate engine geared to the four wheels under the firebox, helps these engines when starting and when going up a grade. These engines are equipped with mechanical stokers, which shovel coal into the firebox ~~and~~ without the aid of a fireman. Underneath the smokebox are two Westinghouse air compressors, which supply ~~steam~~ compressed air to ring the bell and to blow the steam chime which the



4-6-4 or Hudson Speed Type Locomotive



Leading Dimensions of 4-6-4 "Hudson Speed" Express Passenger Engines. New York Central Railroad

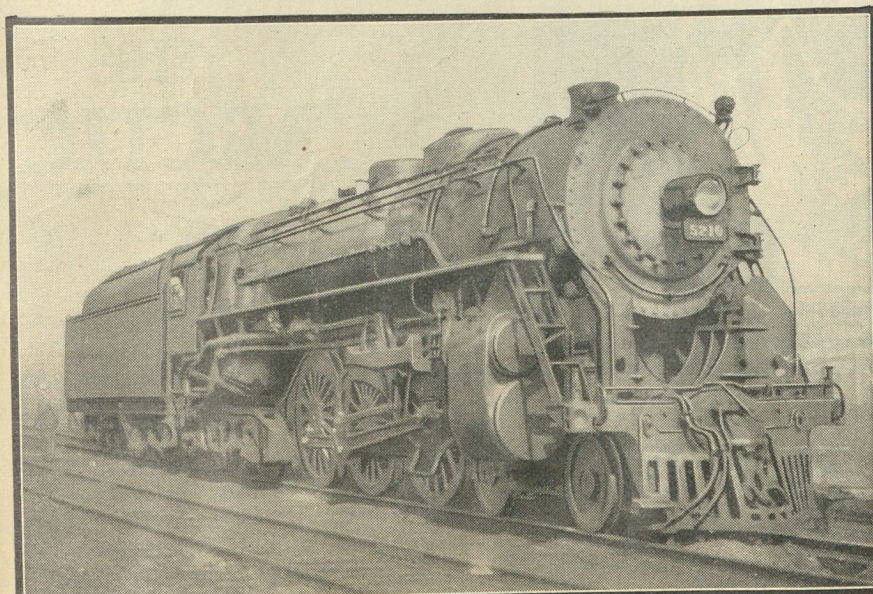
Cylinders (2) 25 in. diameter by 28 in. stroke.
The entire cylinder block is cast steel. This is a saving of two tons dead weight.

Driving Wheels	...	79 in. dia.
Total Wheelbase	...	76 ft. 1½ in.
Boiler, inside diameter	...	82 7/16 in.
Grate Area	...	81.5 sq. ft.
Heating Surface—Flues	...	3,403 "
Tubes	...	800 "
Arch Tubes	...	37 "
Firebox	...	244 "
Superheater	...	1,951 "
Total	...	6,435 "

Weights in Working Order—		
On Drivers	...	182,000 lb.
On Heading Truck	...	63,500 "
On four wheel Trailer Truck	...	97,500 "
Total	...	343,000 "

Maximum Tractive Power—		
Engine	...	42,300 "
Booster	...	10,900 "

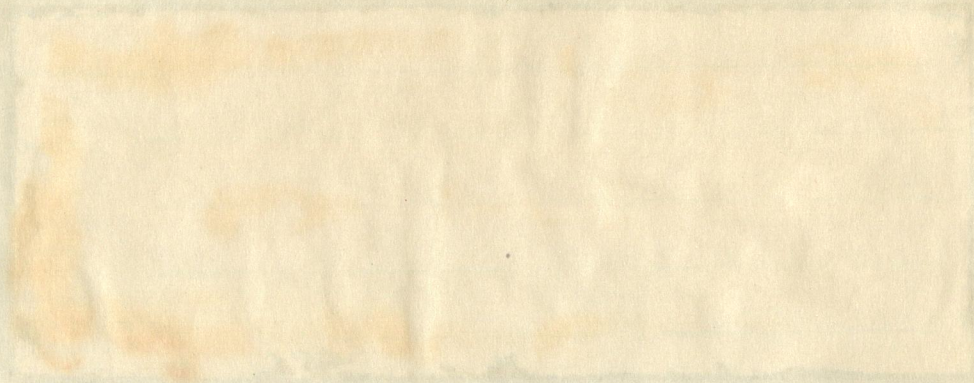
The tender is carried on two six-wheeled trucks and has capacity for 15,000 gallons of water and 21 tons of coal.



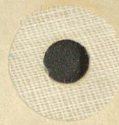
Photo]

[H. W. Pontin

"Hudson Speed" 4-6-4 Baltic type express locomotive No. 5210, New York Central Railroad, U.S.A.

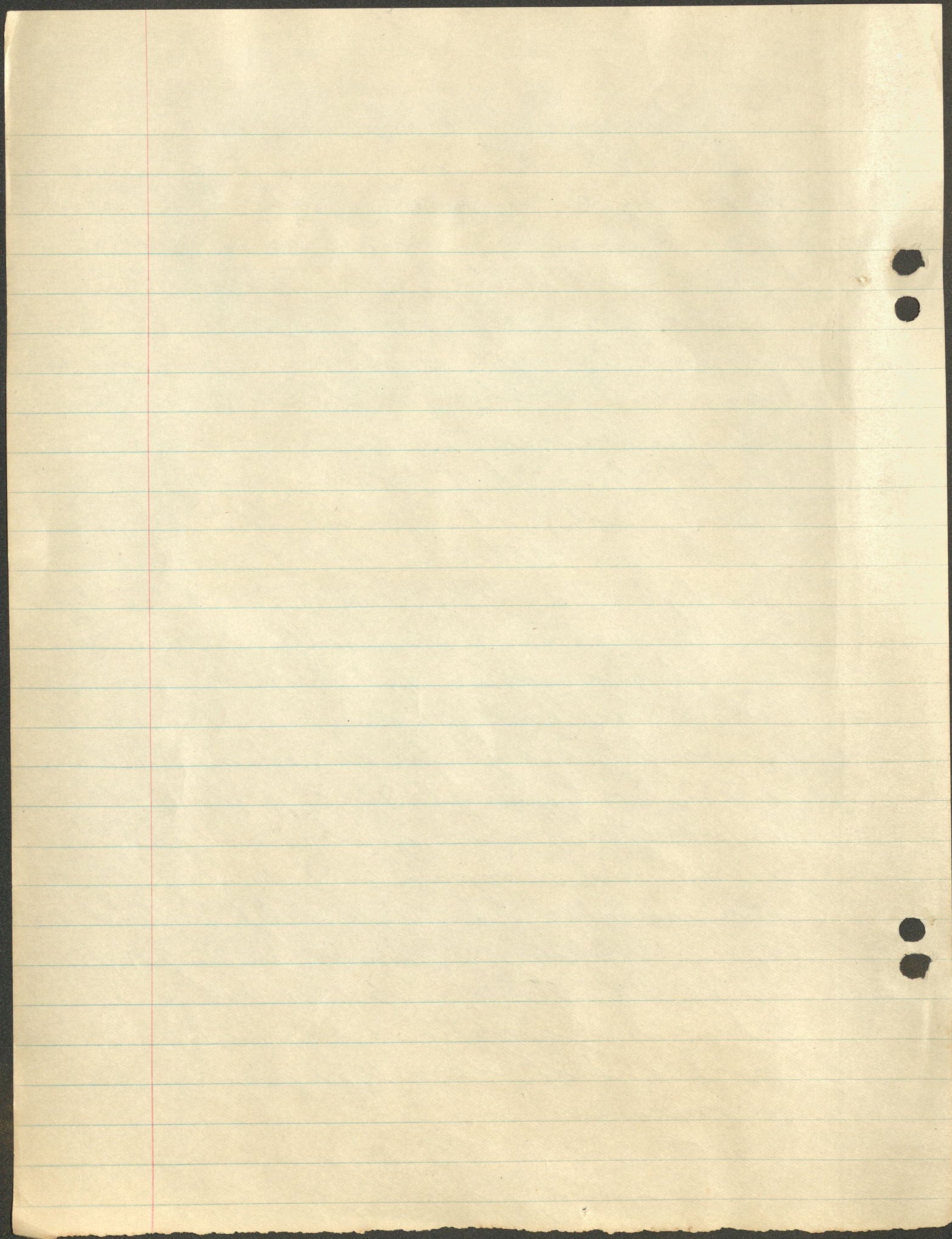


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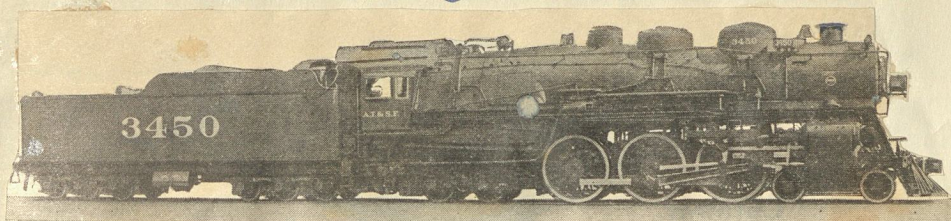


Passenger locomotives Continued.

The locomotive in example 5 is another 4-6-4 type locomotive which is used for passenger work on moderate grades, while the Hudson Speed type is used for work on comparatively level ground. Example 6 shows a Pacific type locomotive which is classified as 4-6-2. These locomotives are very common in the ~~U~~ United States and are in service in nearly all parts the world. Example 7 shows an Atlantic 4-4-2 locomotive used for passenger service. This type of locomotive is gradually disappearing and being superseded by the Pacific type. It is excellent for speed but is not powerful enough for a modern passenger train. In Example 8 is a picture of a 4-4-0 type passenger locomotive. These were very common in early days but their number has dwindled until there are very few in service in the United States. Other types of locomotives which I have not mentioned are the Prairie type 2-6-2 and the 4-6-0 type passenger locomotives.

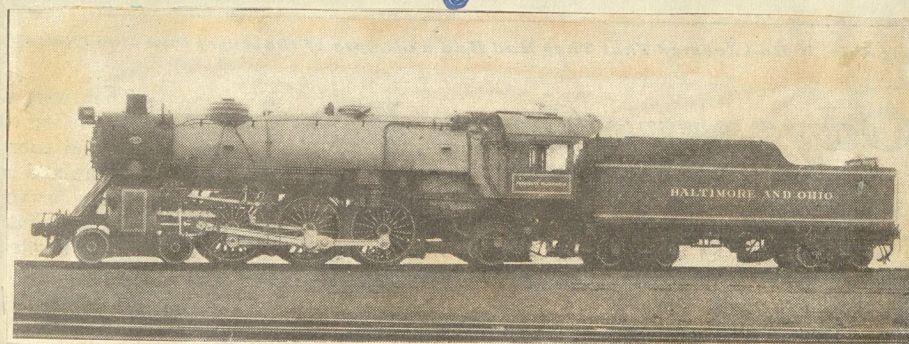


AMERICAN PASSENGER LOCOMOTIVES

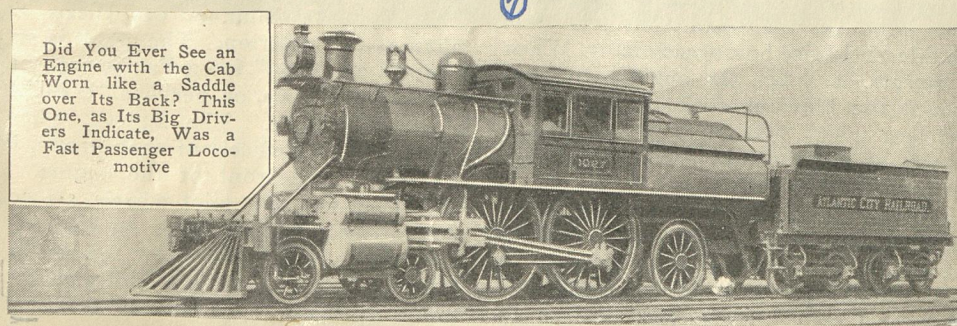


4-6-4 Type Locomotive Built by The Baldwin Locomotive Works

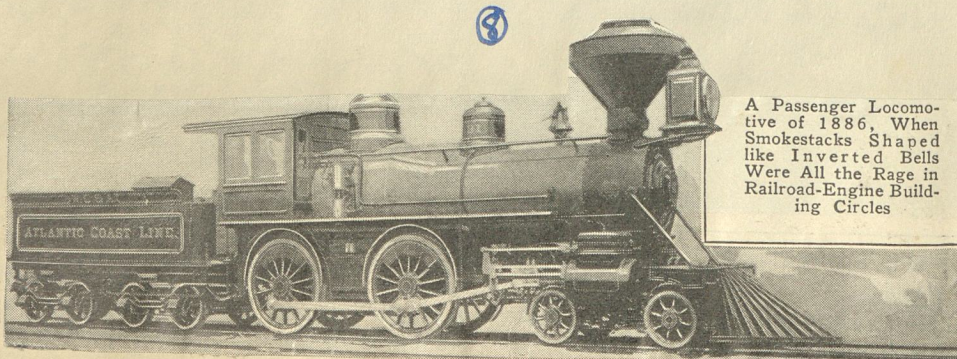
Cylinders	25" x 28"	Weight, engine	349,500 lbs.
Drivers, diam.	73"	Tractive force	44,900 lbs.



*Pacific Type (4-6-2) High-Speed Passenger Engine. 80" Driver
230 Pounds Pressure. Maximum Tractive Effort 50,000 Pound*



Did You Ever See an Engine with the Cab Worn like a Saddle over Its Back? This One, as Its Big Drivers Indicate, Was a Fast Passenger Locomotive



A Passenger Locomotive of 1886, When Smokestacks Shaped like Inverted Bells Were All the Rage in Railroad-Engine Building Circles

1941

1942

1943

1944

Allan Youell.

Freight Locomotives

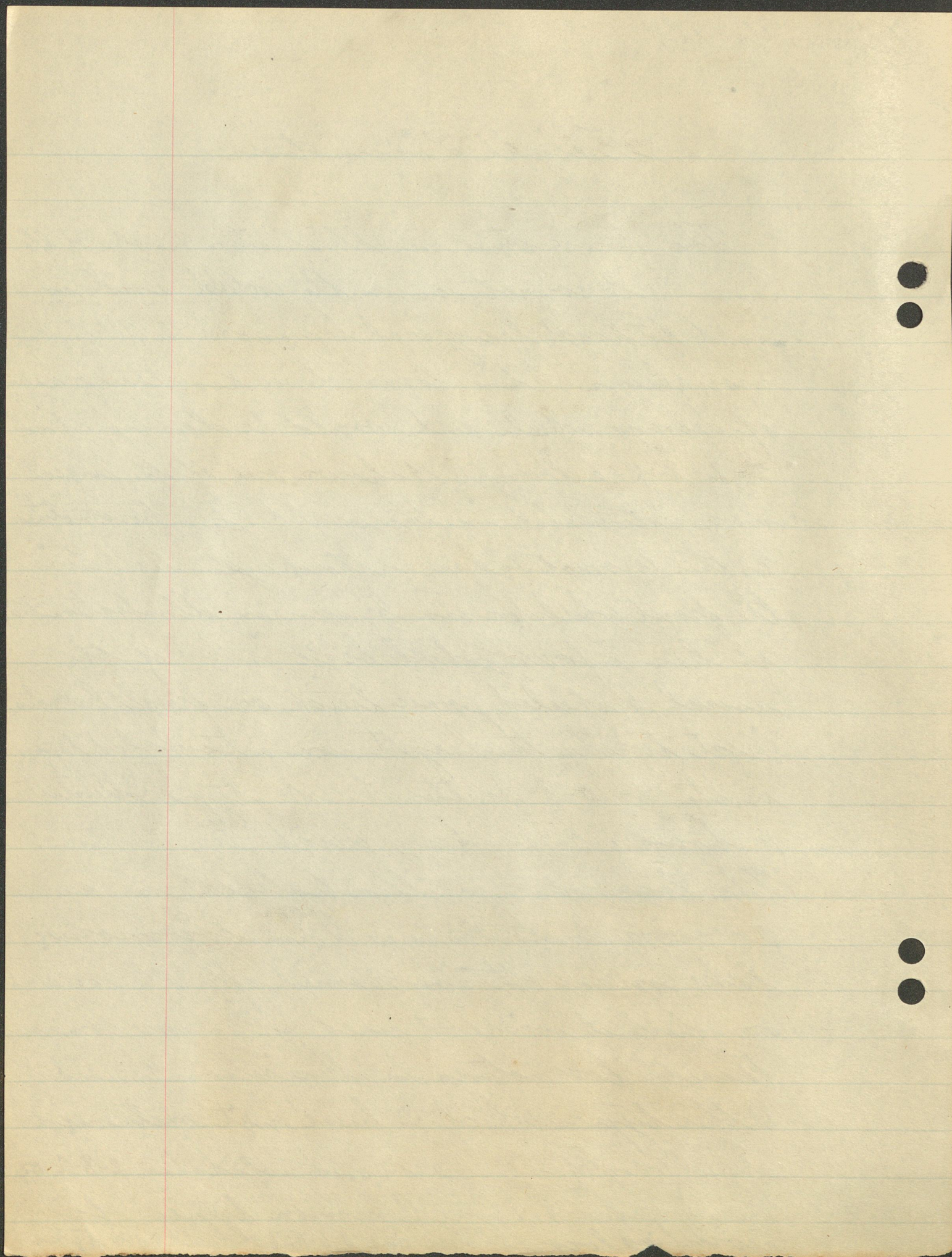
The locomotive in illustration 9 is one of the largest locomotives in the world and is used to haul heavy coal trains over the Allegheny mountains. These locomotives have three pairs of driving wheels and would be classified as 2-8-8-8-2. Example 10 shows one of the largest non articulated in the world. ~~This locomotive~~

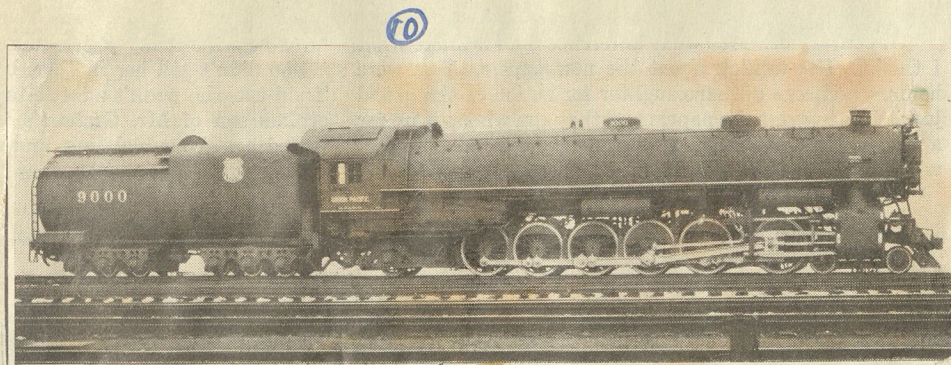
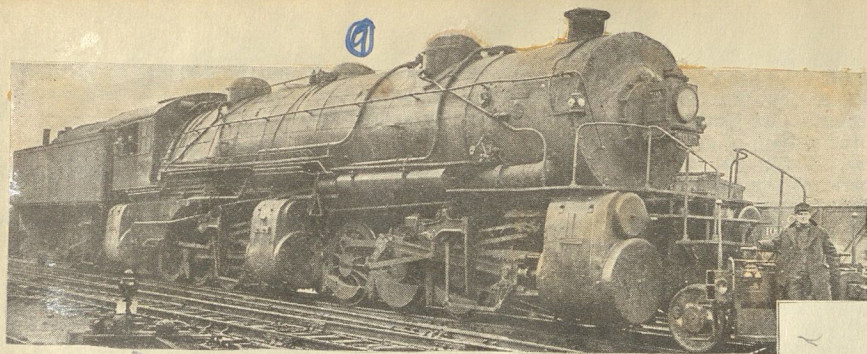
As this locomotive has a third cylinder between the front wheels, (as can be seen in illustration 25a) it has a four wheel bogie instead of the usual 2 wheeled pony truck on freight locomotives.

Next to this the largest non articulated type is the 4-10-2 Southern Pacific type. Illustration 11 shows a 2-10-4 heavy freight locomotive.

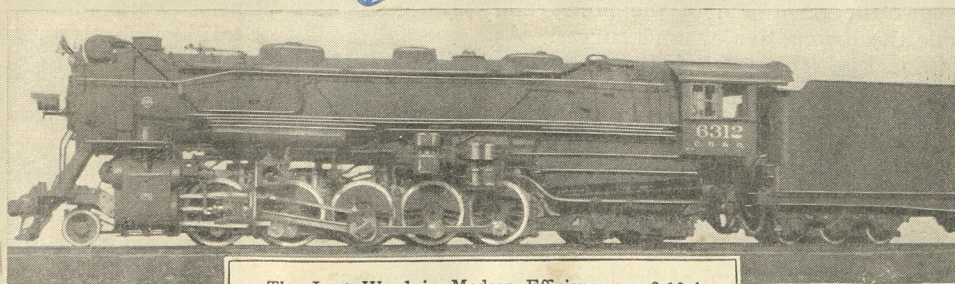
The locomotive in illustration 12 is a 2-10-2 or Santa Fe type. This locomotive like many others is named after the railroad on which it was first used. It is more common than the locomotives in illustrations 9, 10 and 11.

Other types which I have not mentioned are 2-6-0 or Mongol, 2-8-0 or consolidation, 2-8-2 or Mikado and 2-8-4 type. Common types of switching locomotives are 0-6-0, 0-8-0 and 0-10-0 type.

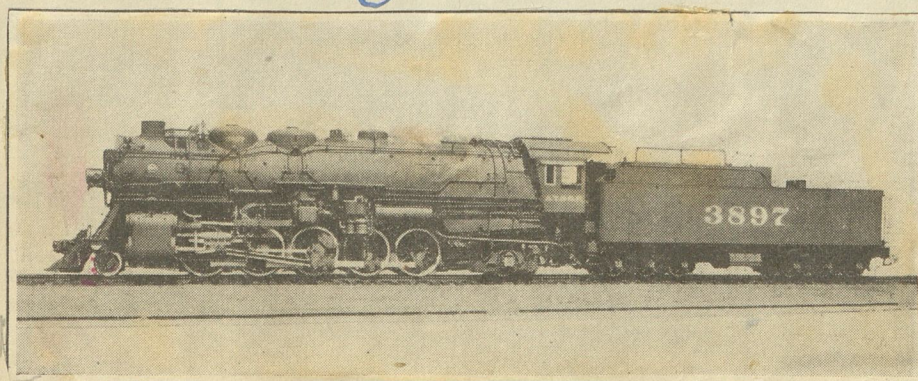




*Union Pacific Type (4-12-2)
Three-Cylinder Freight Lo-
comotive. Maximum Trac-
tive Power 96,650 Pounds.
Tank Carries 21 Tons of
Coal, 15,000 Gallons of
Water. Driving Wheels 67"
Diameter, 220 Pounds
Steam Pressure*



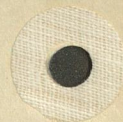
*The Last Word in Modern Efficiency; a 2-10-4
Type (Count the Ten Driving Wheels) Built to
Haul Heavy Coal Trains*



*Santa Fe Type (2-10-2)
Freight Locomotive. 63"
Drivers, 220 Pounds
Pressure. 85,360 Pounds
Tractive Effort. Tank
Capacity 5000 Gallons
Fuel Oil, 15,000 Gallons
Water*

Freight

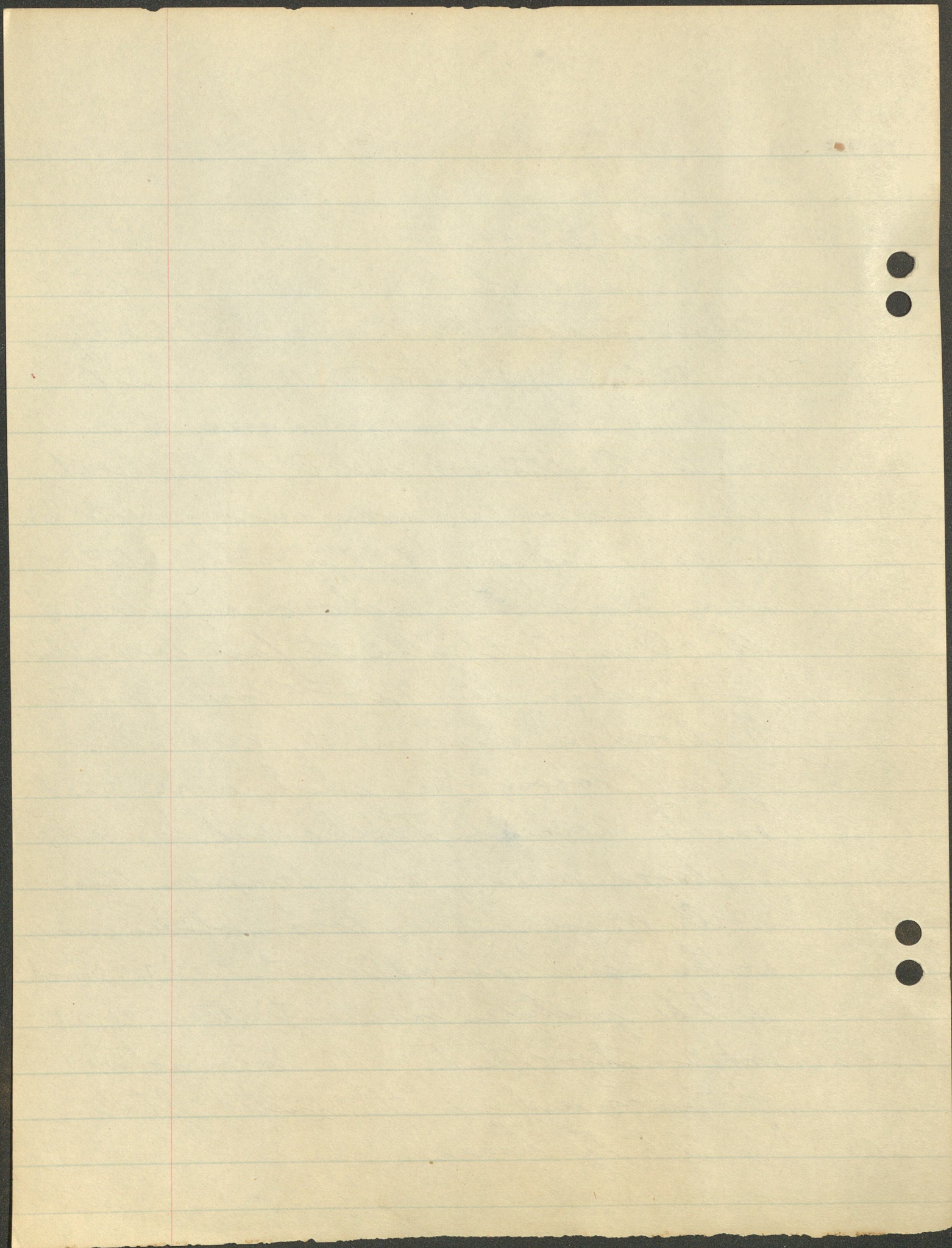
Locomotives



Allan Yuell.

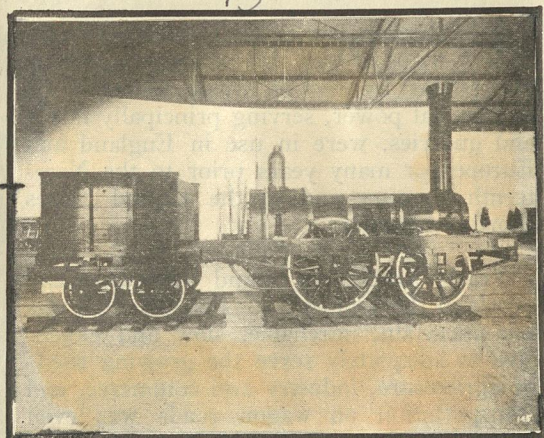
Early American Locomotives

Illustration 14 shows a picture of the Tom Thumb, which was built by Peter Cooper for the Baltimore and Ohio Ry. in 1829. In Illustration 15 is a picture of the "Atlantic" which was ~~also~~ also used on the Baltimore and Ohio Railroad. This locomotive was in service for 50 years and in 1928 would still run. Illustration 16 shows a picture of the De Witt Clinton the first locomotive ~~to~~ used on the New York Central Railroad. Illustrations 17, 18, 19 show types of locomotives which were used on the Atchison, Topeka and Santa Fe Railroad in early days. Compare these with the present day locomotives used on the same railroad (illustrations 1, 4, 5, and 12). The pictures in illustrations 20, 21 and 22 show the type of locomotive that was used in the United States in early times.



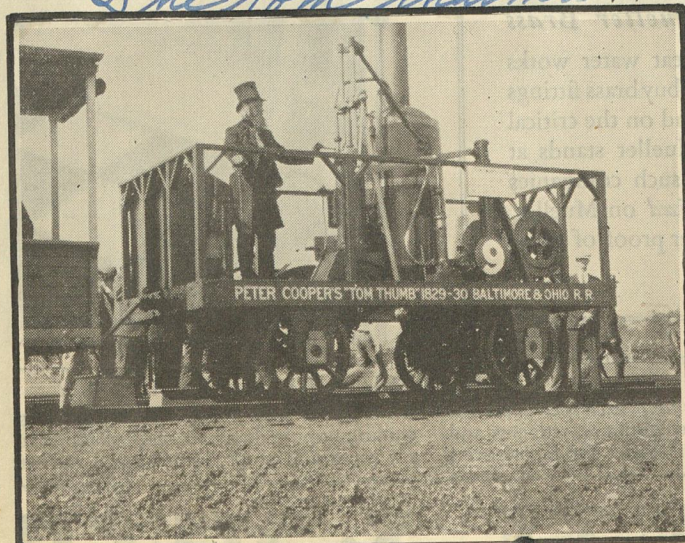
OLD IRONSIDES

13

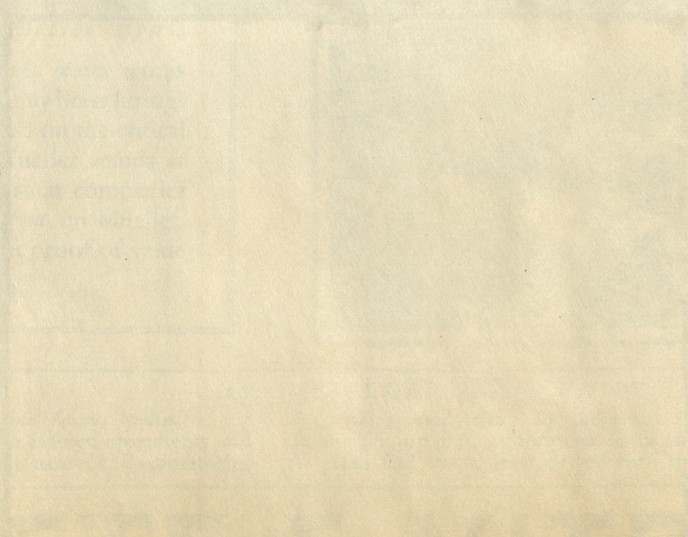
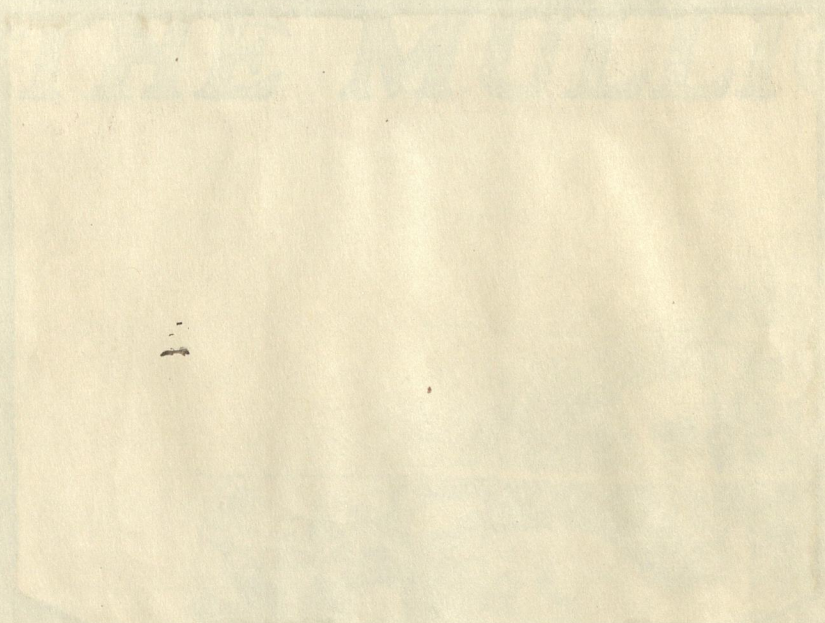
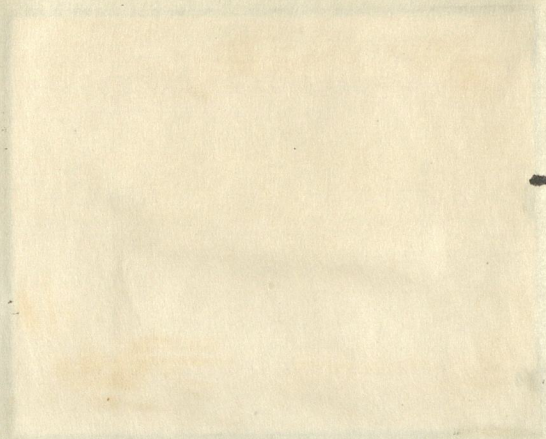


The First Locomotive to Run From Philadelphia to Norristown

The Tom Thumb 14



The Tom Thumb



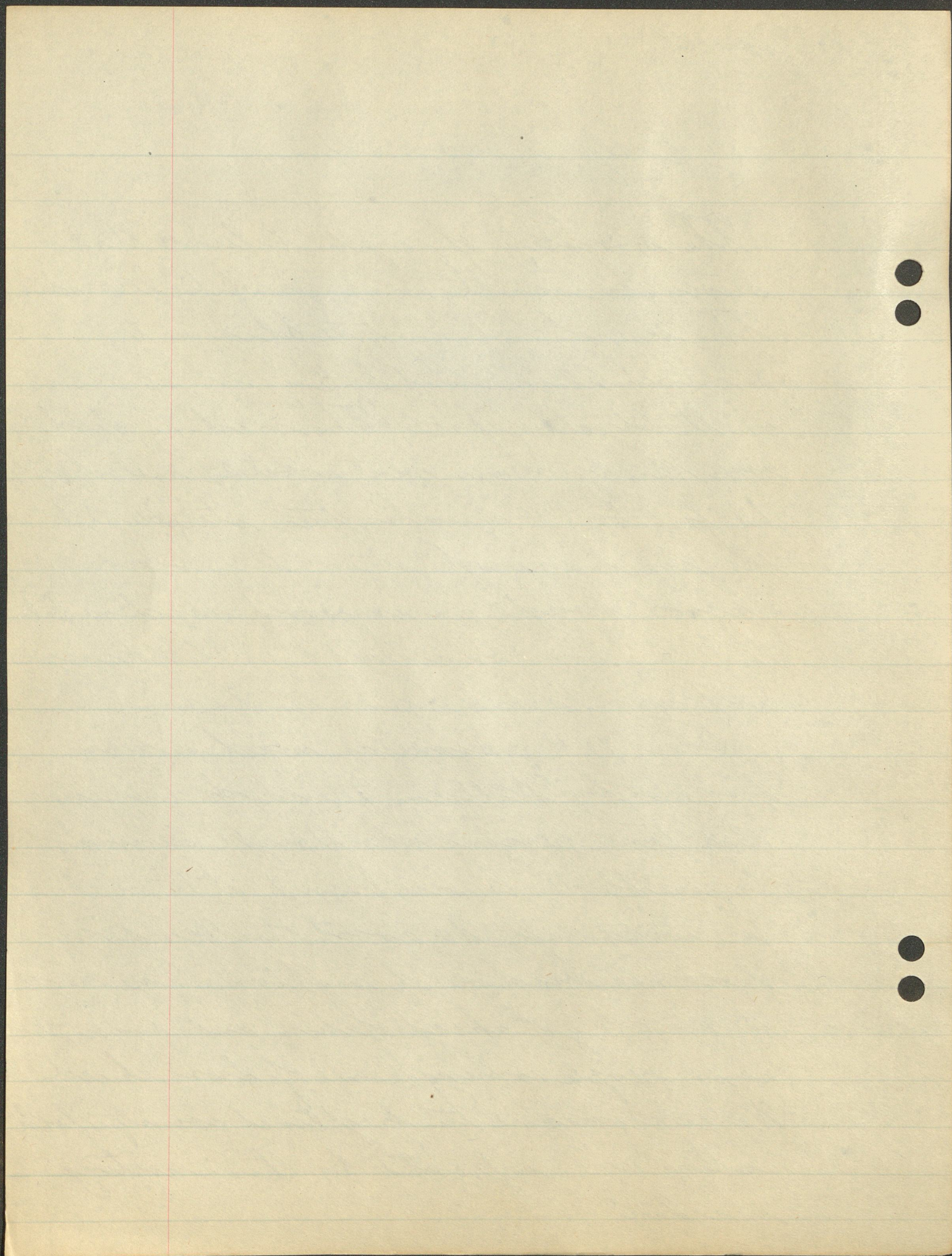
Allan Yonell.

Early Locomotives

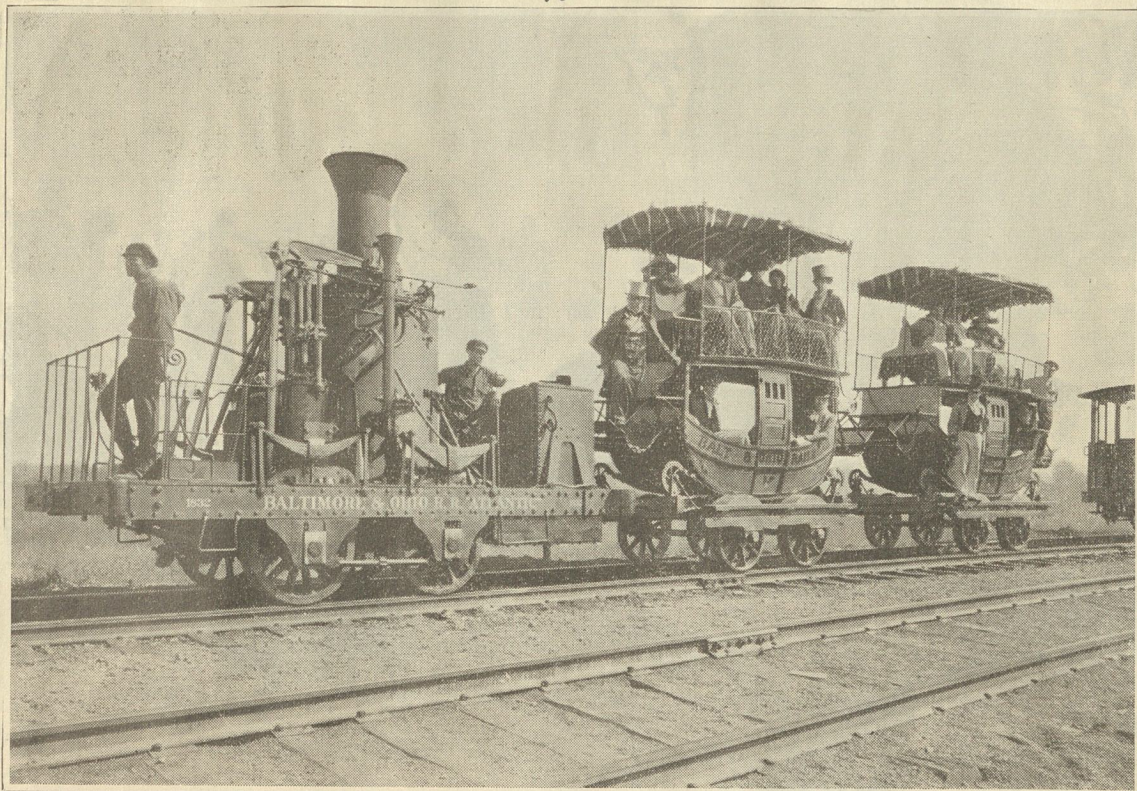
The majority of people believe that Stevenson was the inventor of the locomotive. This is not entirely true because in 1770 a machine invented by Cugnot appeared on the streets of Paris. This machine, which was run by steam went about $2\frac{1}{2}$ miles per hr. for about 15 minutes then stopped until it gained enough steam to proceed.

Cugnot brought an improved machine later, but this was considered a public danger and was locked up in the Arsenal.

In 1784 a similar machine was brought by William Murdoch. During this time persons who thought seemingly impossible things were burned at the stake for witchcraft. To avoid this Murdoch tried his machine at nighttime. One night the machine got ahead of him and encountered some people coming home from church. We can imagine the frightened country folk as they were confronted by this snorting machine.



15.



PICTURE TAKEN AT B. & O. CENTENARY CELEBRATION

In 1832 This Was the Last Word in Speed and Comfort. They Did Not Have Tunnels Then. The Engine Pictured Was in Service as Late as 1882, and in 1928 Would Still Run

16.



YOUTH'S
COMPANION

Published by the
American Board of Christian
Education
No. 100 N. 3rd St.
Philadelphia, Pa.

Subscription price
\$1.00 per annum in advance
Single copies 10 cents
Entered as Second-Class
March 1, 1879
Postpaid

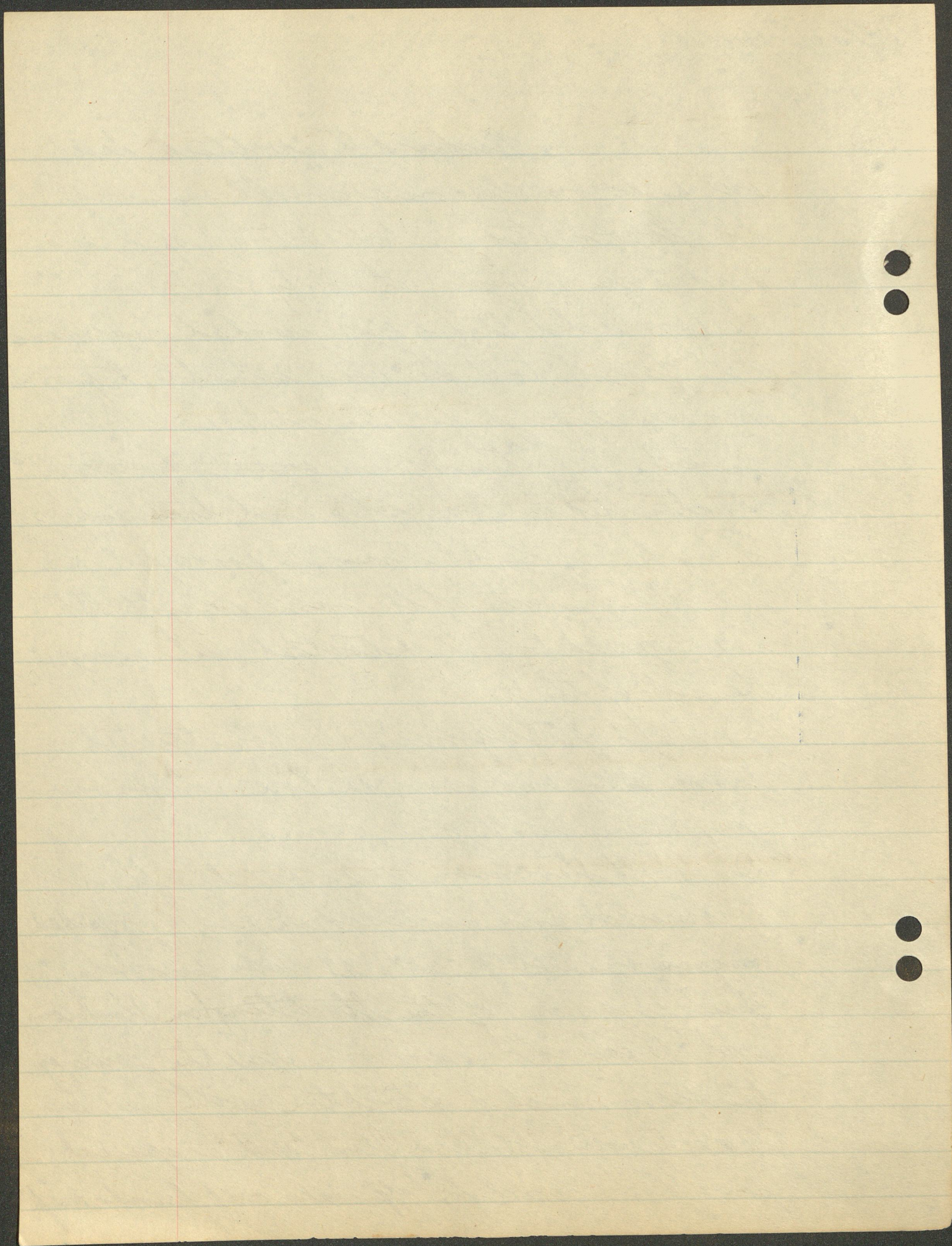
Allan Youell.

In 1804, ~~a~~ Richard Trevethick, tried out a locomotive on a small railway. His locomotive pulled 10 tons of iron and 70 passengers at nearly 5 miles per hour. He conducted this experiment at his expense but found that he was unable to provide money enough for the upkeep of the track.

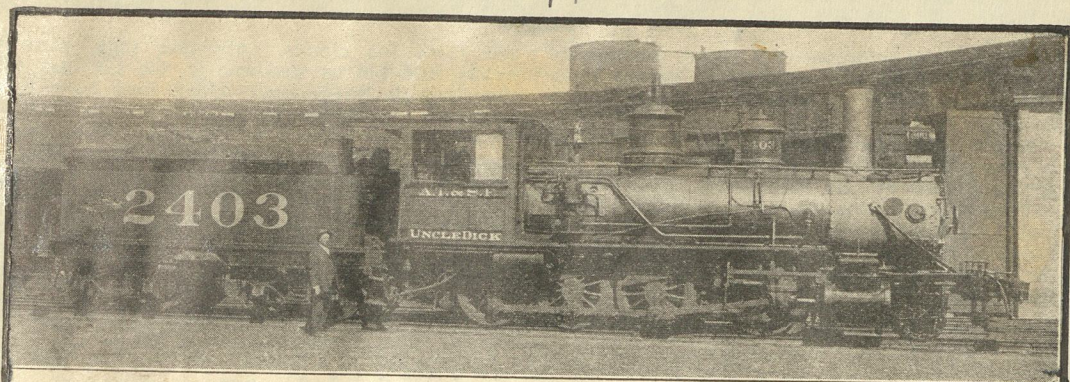
In 1811 Matthew Murray ~~and William Hedley~~ constructed a locomotive and tramway. This locomotive ^{was} 5 times as powerful as Trevethick's but of the same weight. It was geared to a third toothed rail along the side of the track.

In 1813 William Hedley constructed a tram way and several locomotives each improving as they were made.

In 1825 Stevenson tried out his first locomotive and succeeded in hauling 8 loaded wagons on a steep grade. He was pointed chief engineer of the Stockton and Darlington railway. On the ^{first} journey the train reached Stockton with six wagons loaded with coal and flour, and a special passenger coach for officials and friends, and

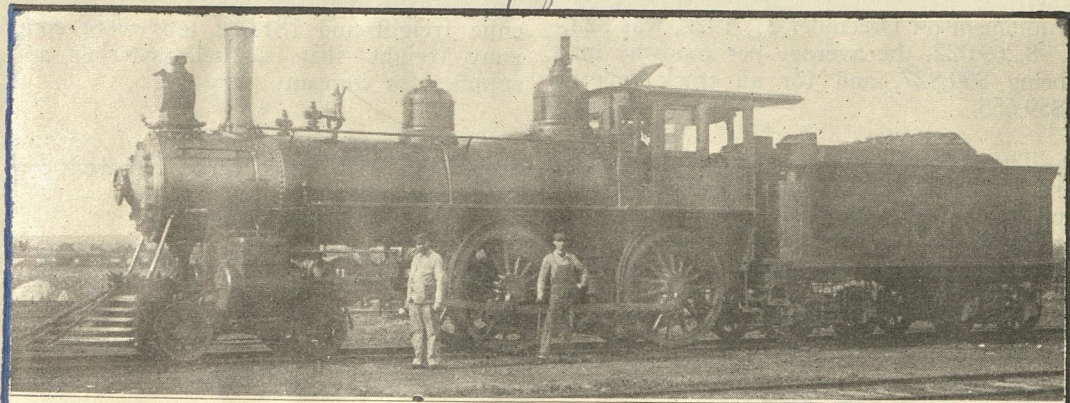


17



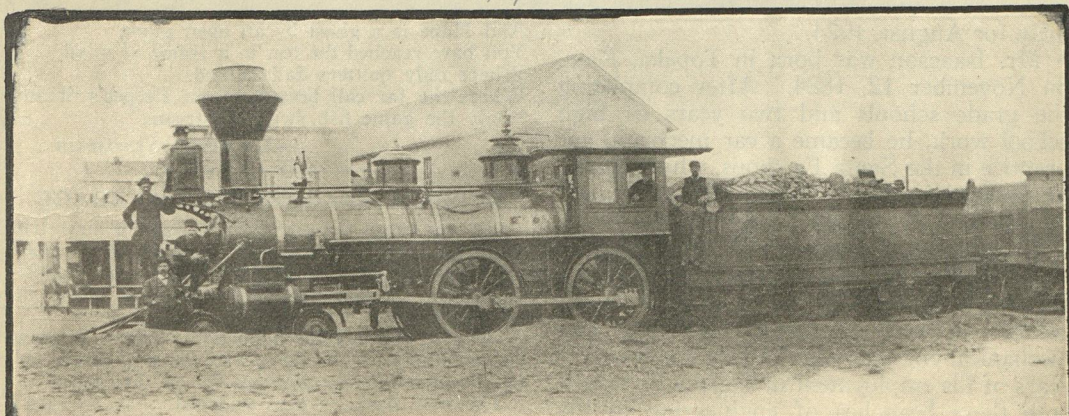
THE FAMOUS "UNCLE DICK," FIRST LOCOMOTIVE TO MAKE THE GRADE OVER RATON PASS
This was the "monster" locomotive of its day, and was built at the Baldwin Locomotive Works in 1878.

18



A DANDY OF HER DAY

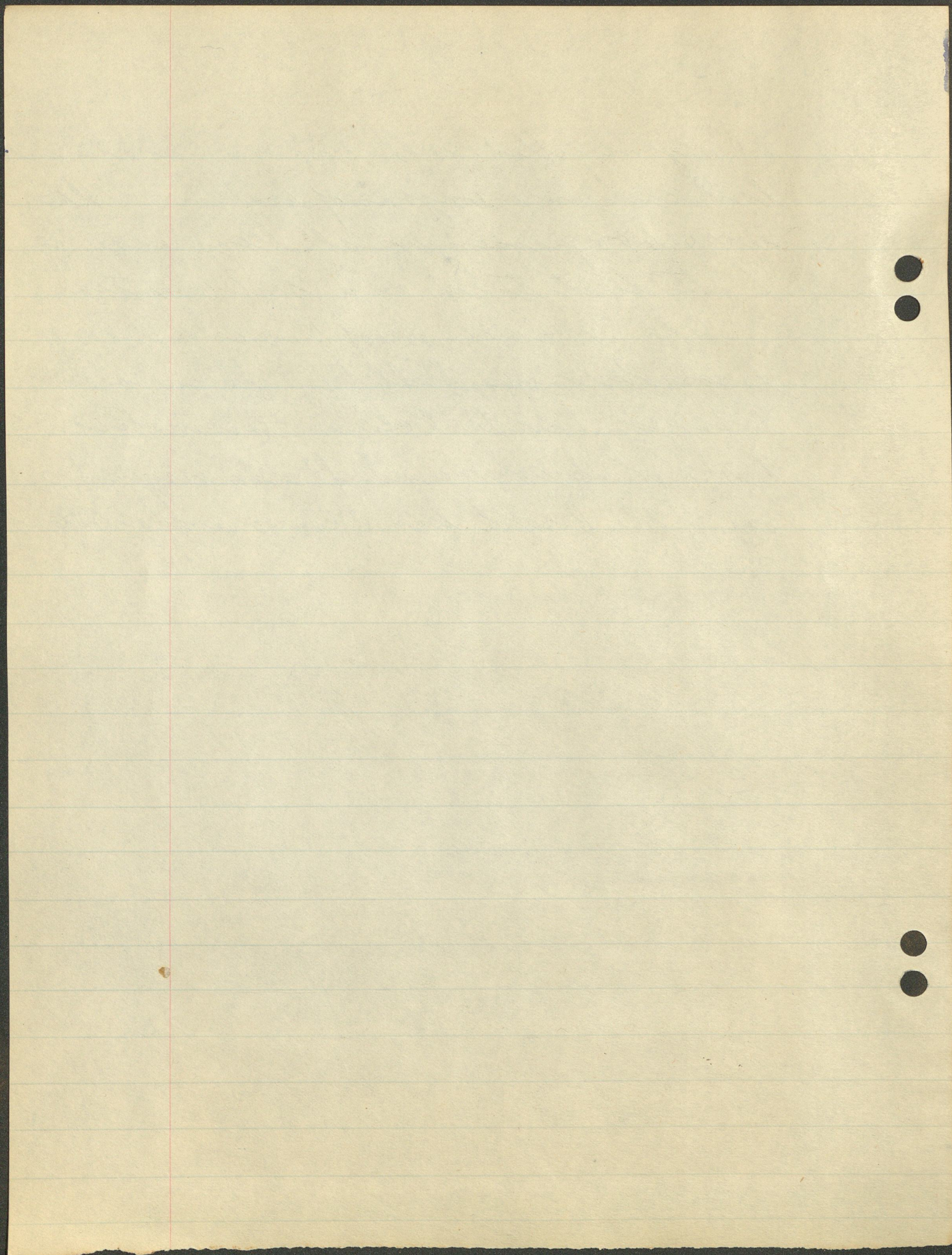
19



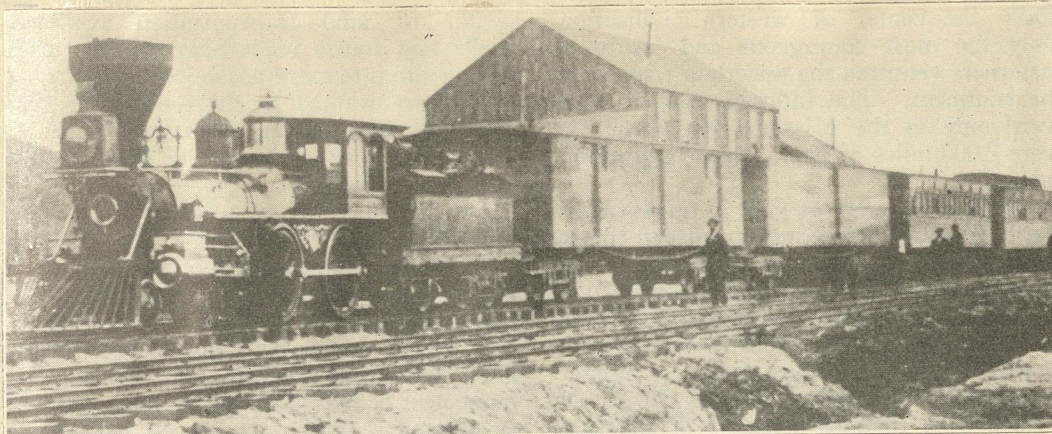
ENGINE NO. 25, THE "GEORGE C. LORD," PHOTOGRAPHED IN 1882

21 wagons fitted with temporary seats and last six more wagons of coal, in all there were 600 passengers all being eager to be the first to ride on a railway train.

Old "Ironides", one of the early American locomotives, was built by Matthias Baldwin. Today we have the Baldwin Locomotive Works, which was named after its originator, one of the largest locomotive manufacturers in the country.



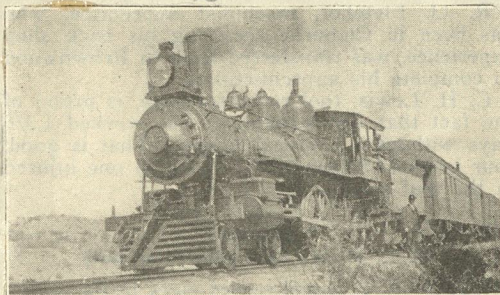
20



IN DAYS OF OLD

Express was carried on the first railroad trains in the United States and stagecoaches were employed to carry it beyond the rail terminal points

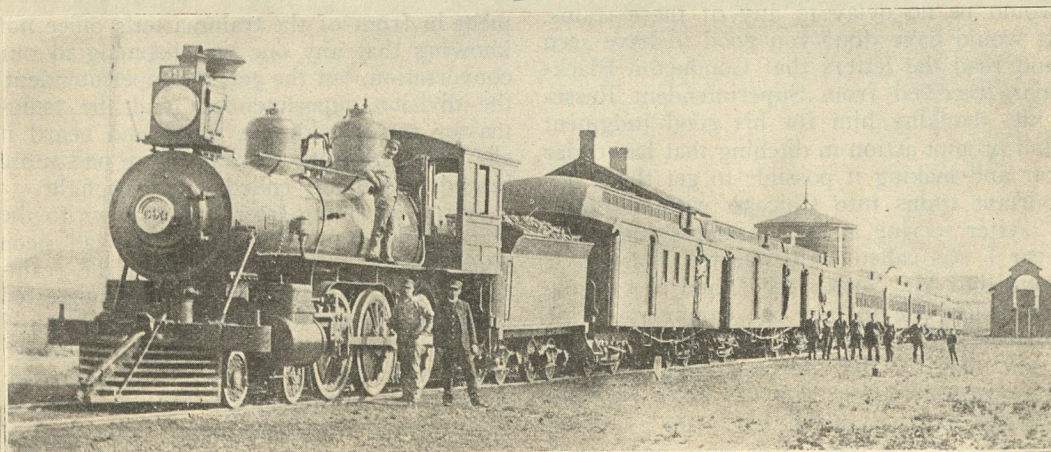
21



NEAR EL PASO IN 1881

This picture of one of the first passengers to run into El Paso was taken on Gramma Hill in 1881. Note the link and pin coupler on the pilot.

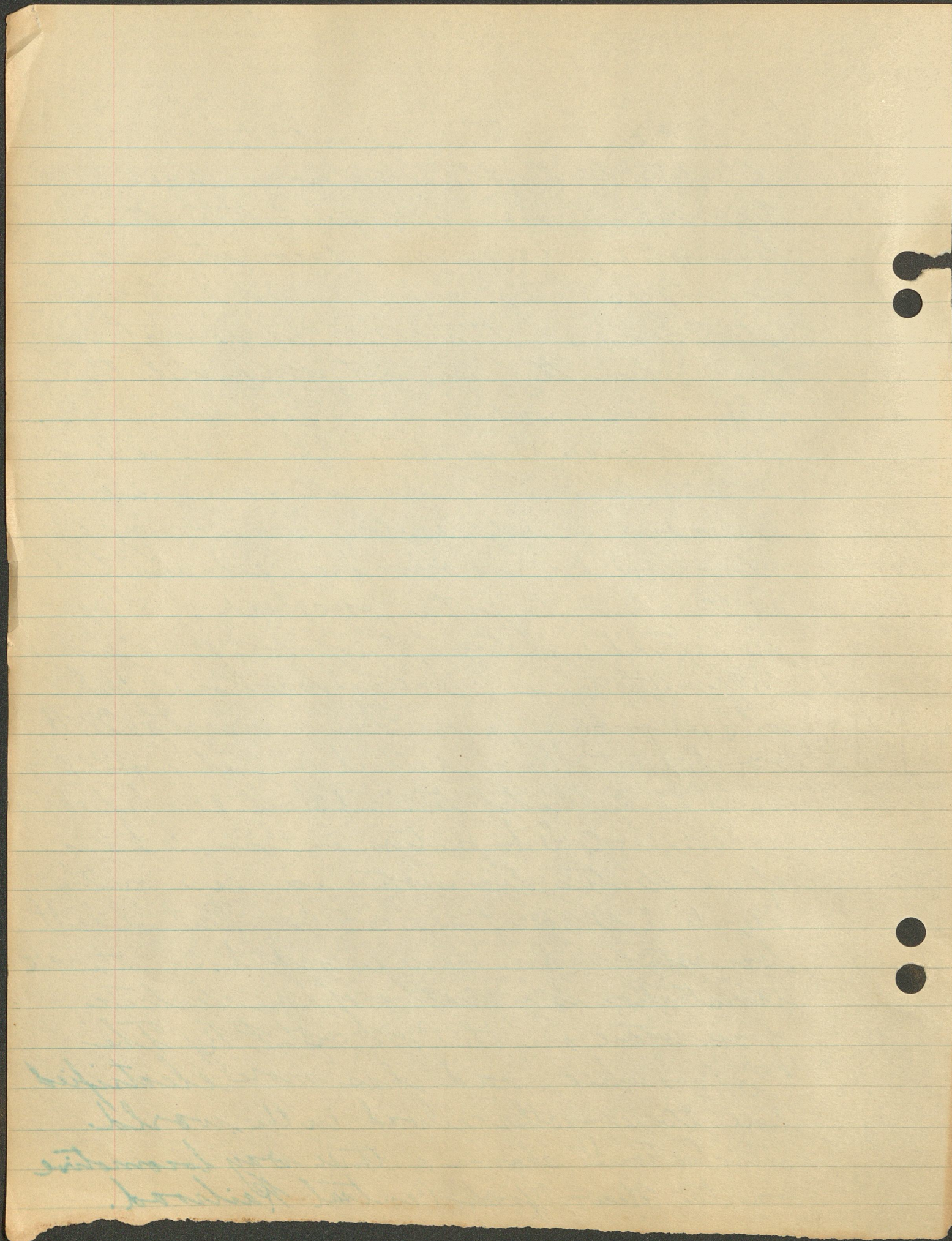
22



IN THE "GOOD OLD DAY" OF THE LINK AND PIN

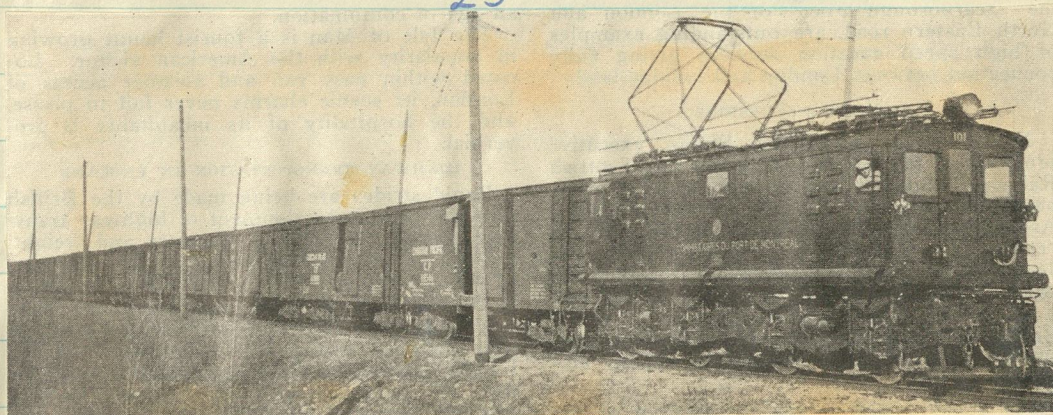
Electric Transportation

Electric locomotives, in some cases have been found more efficient than the steam locomotives. As electric locomotives are smokeless they can be used better for stations and tunnels. They do not use fuel when they are not going while the steam locomotive uses fuel when either going or standing still. When going down a hill they can regenerate power into the wires and so help another train coming up the hill. There is one drawback and that is they have to put an overhead trolley or a third rail to get their power from, unless they want to use a battery locomotive, but this has been found to be very costly. With overhead trolley or a third rail it is ~~very~~ ^{made} very complicated to build an electrified witchyard. The picture in Example 23 is of an electric locomotive in use on the Montreal Harbor Lines. It is a British built locomotive and is very powerful. In the 24th illustration is a picture of an electric locomotive on the C. M. & St. P. Ry. The Milwaukee road has more electrified line than any other railroad in the world. Illustration 25 shows a three way locomotive on the New York Central Railroad.



ELECTRIC TRANSPORTATION

23



ELECTRIC LOCOMOTIVE ON THE MONTREAL HARBOR LINES

These British built electric locomotives draw with ease the heaviest of freight trains, and rank as the most powerful four-axle freight locomotives in the world

24

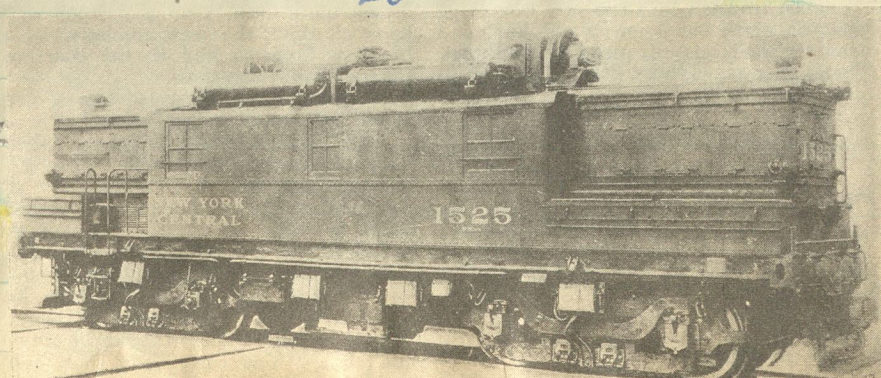


D. N. Y. C.

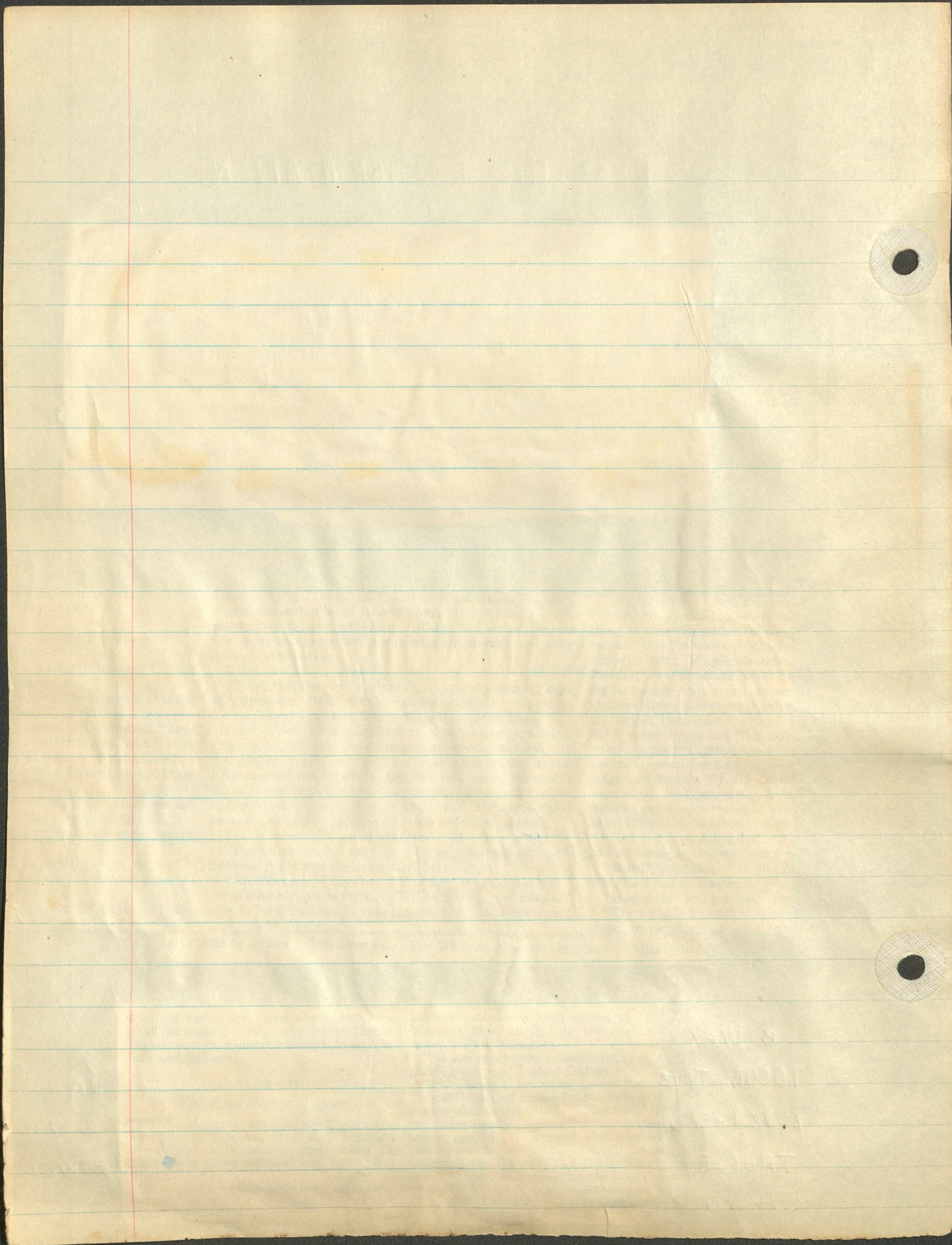
An Electric Passenger Train on the Coast Division of the Chicago, Milwaukee & St. Paul

25

3 WAY
LOCOMOTIVE
OVERHEAD
TROLLEY
THIRD
RAIL



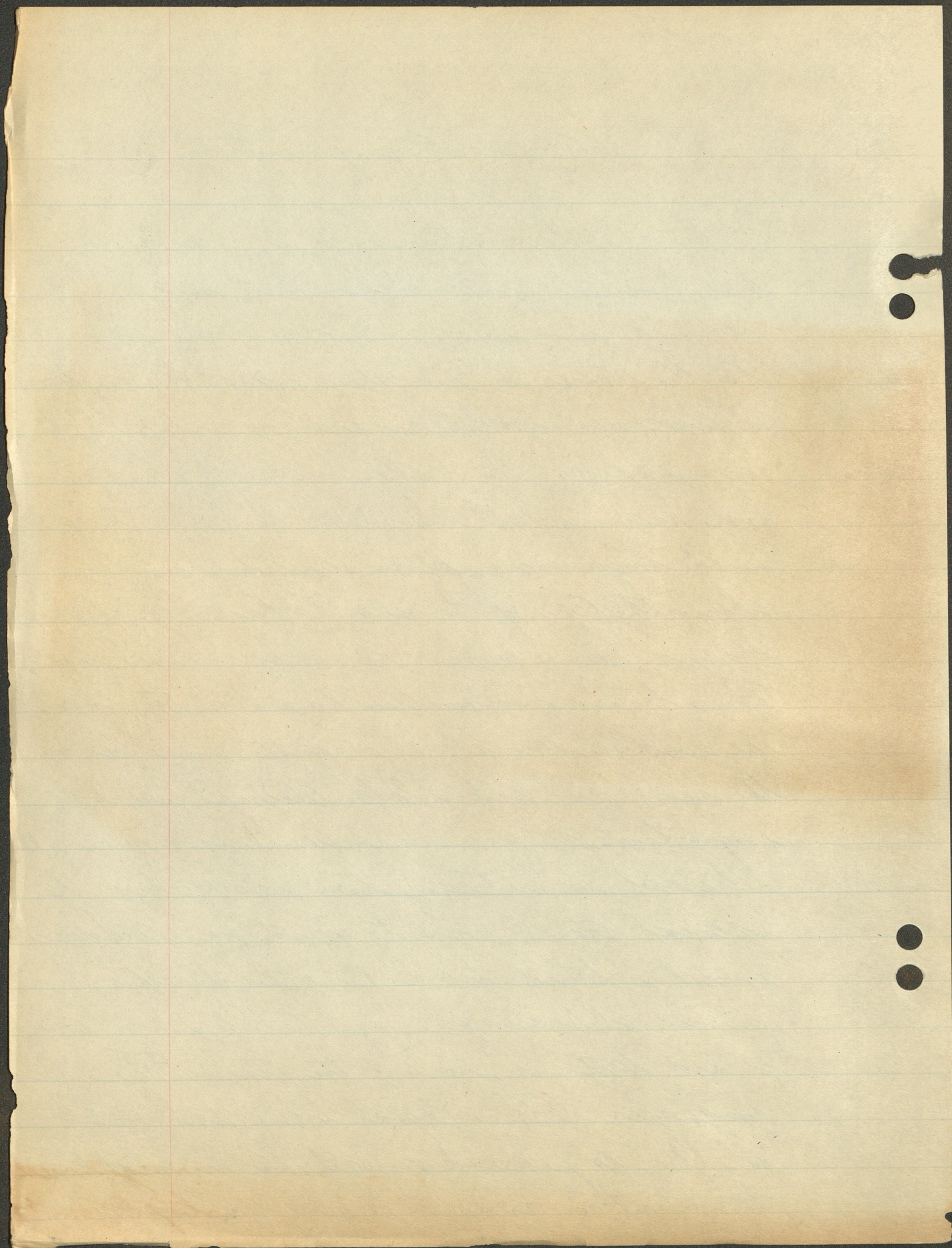
3
UNDER
OWN
POWER

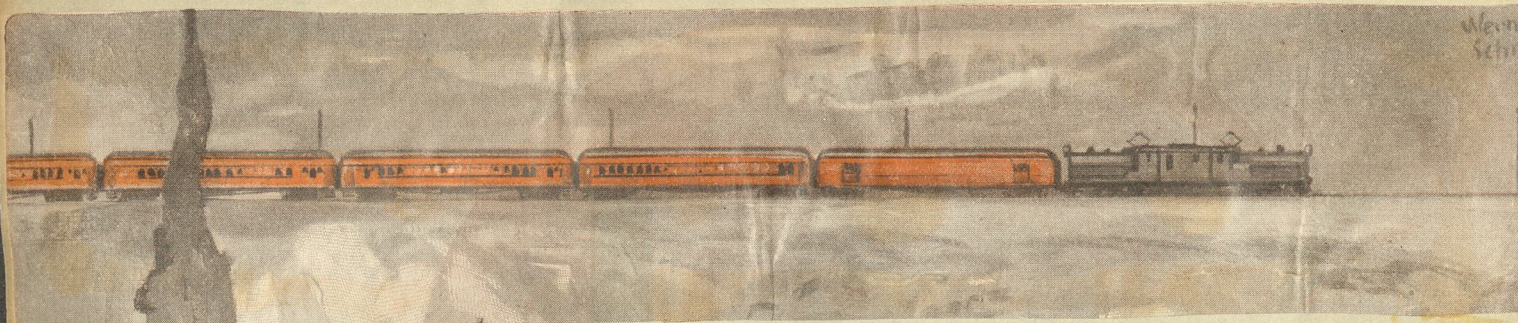


Allan Youell

Modern Equipment

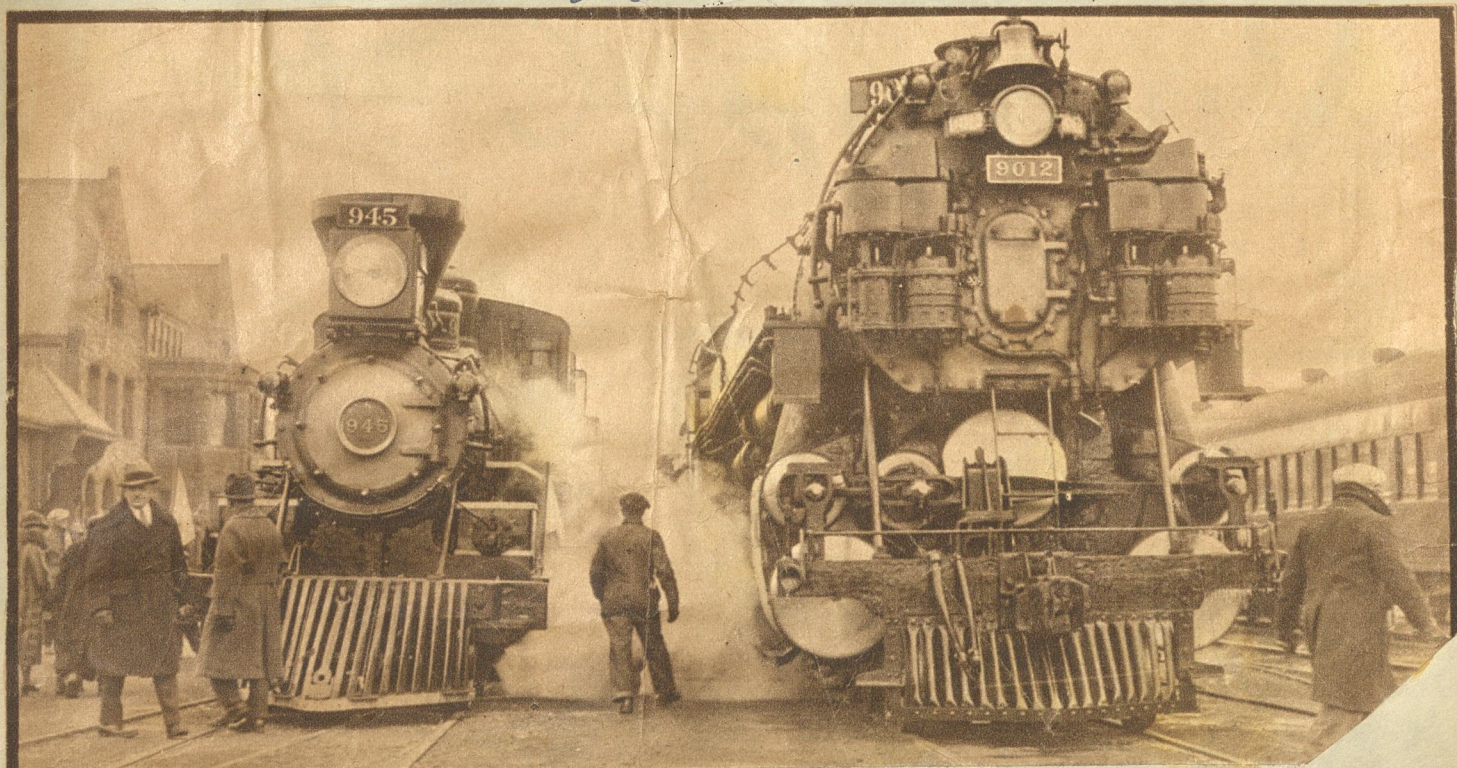
The first locomotive in U. S. was brought from England. After it had been in use for awhile a cow-catcher and a headlight were added. As the trains in those days were not very long a few men could run along on top of the cars and put the brakes on or off when needed. In rainy weather, however, this was dangerous as the men were apt to slip while running along the tops of the cars. Today our freight trains range from 1 to 200 cars in length. These trains no matter how long they may be are always under control of the engineer by the use of air brakes. The telegraph is also important. At one time, before the invention of the telegraph, an entire system was delayed. A special train was to wait on a sidetrack until a train from the other direction had passed it being a single track line. Time passed but no sight of the train. The engineer of the special train did not know whether to proceed or wait, as he might meet the other train and not be able to stop. Meanwhile





Wern
Schn

25a



A COMPARISON

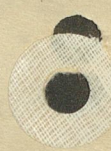
NEW 9000 OR
UNION
PACIFIC
TYPE
(4-12-2)



AMERICAN BOND
EAGLE



AMERICAN BOND
EAGLE



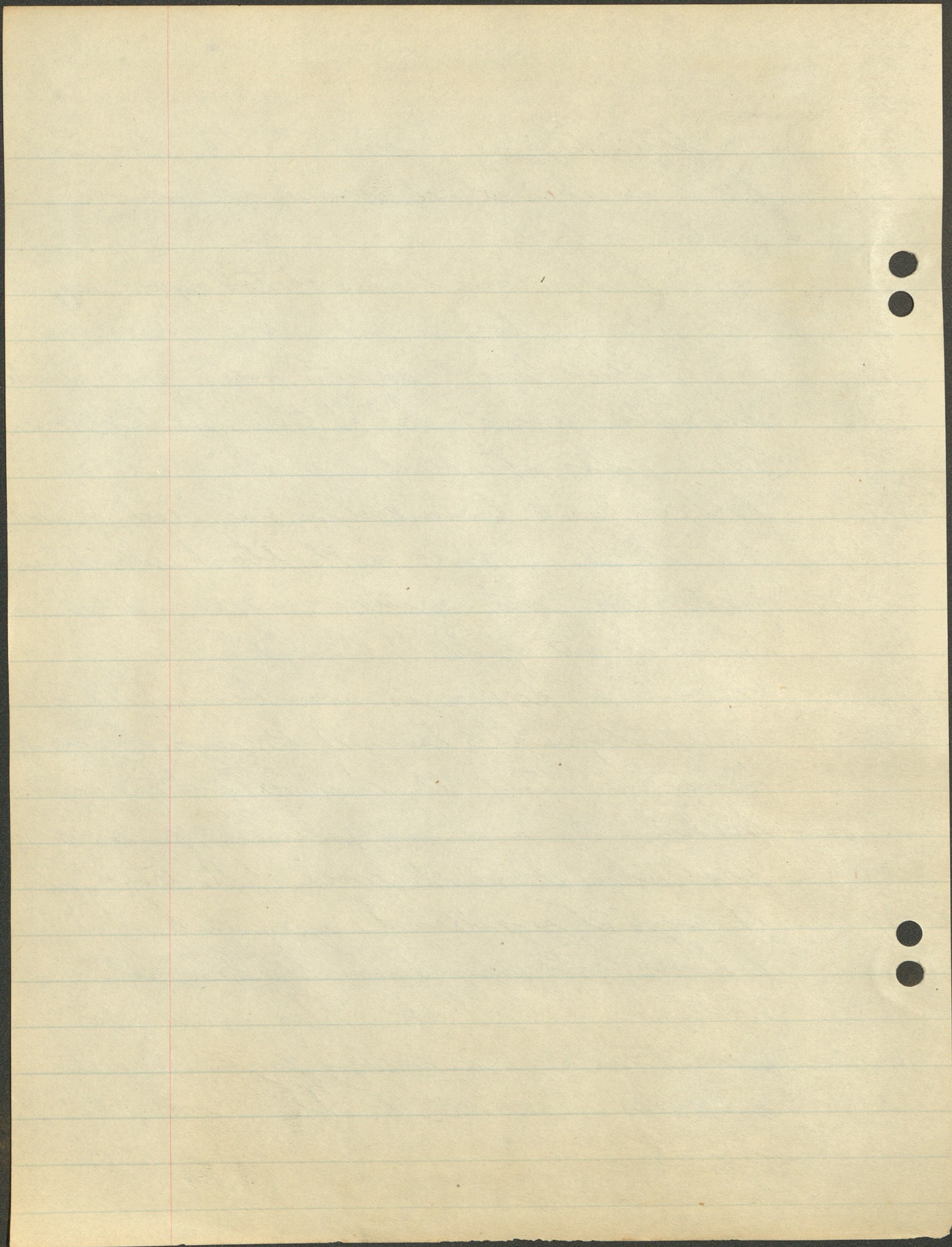
AMERICAN BOND
EAGLE

Allan Youell.

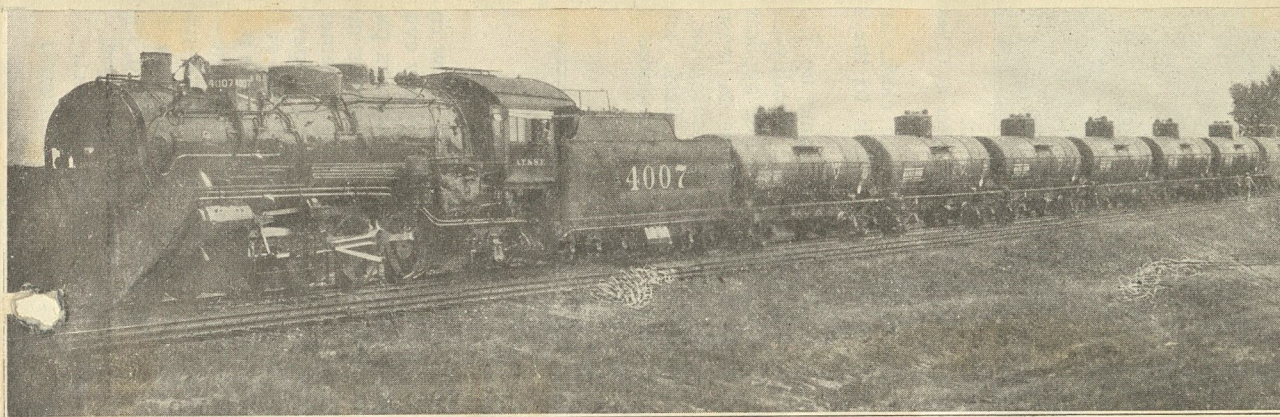
the train they had been waiting for had been wrecked which caused the whole system to be delayed.

The first-class trains of today are equipped with showers, barbers and private stenographers.

For the utmost safety automatic block signals are on most of the important lines. These automatic block signals operate as follows: as a train enters one block, or section of track, the signal in the block which has just been past registers danger until the train is out of the block which has just been entered. A device is now being tried out which stops the train, if the signal registers danger, without the engineer putting on the brakes. It operates as follows: a lever protrudes above the level of the track, ^{where} if the signal registers danger, which strikes a lever protruding from the locomotive so putting on the brakes. This is sure to prevent accidents during fogs, when the engineer may not be able to see the signal.



FREIGHT TRAINS



EIGHTY CARLOADS OF PRESSURE GASOLINE—NEARLY A MILLION GALLONS—MOVING IN A SINGLE TRAINLOAD



Transporting Big Timber in Oregon



TRAINLOAD OF COMBINE HARVESTERS

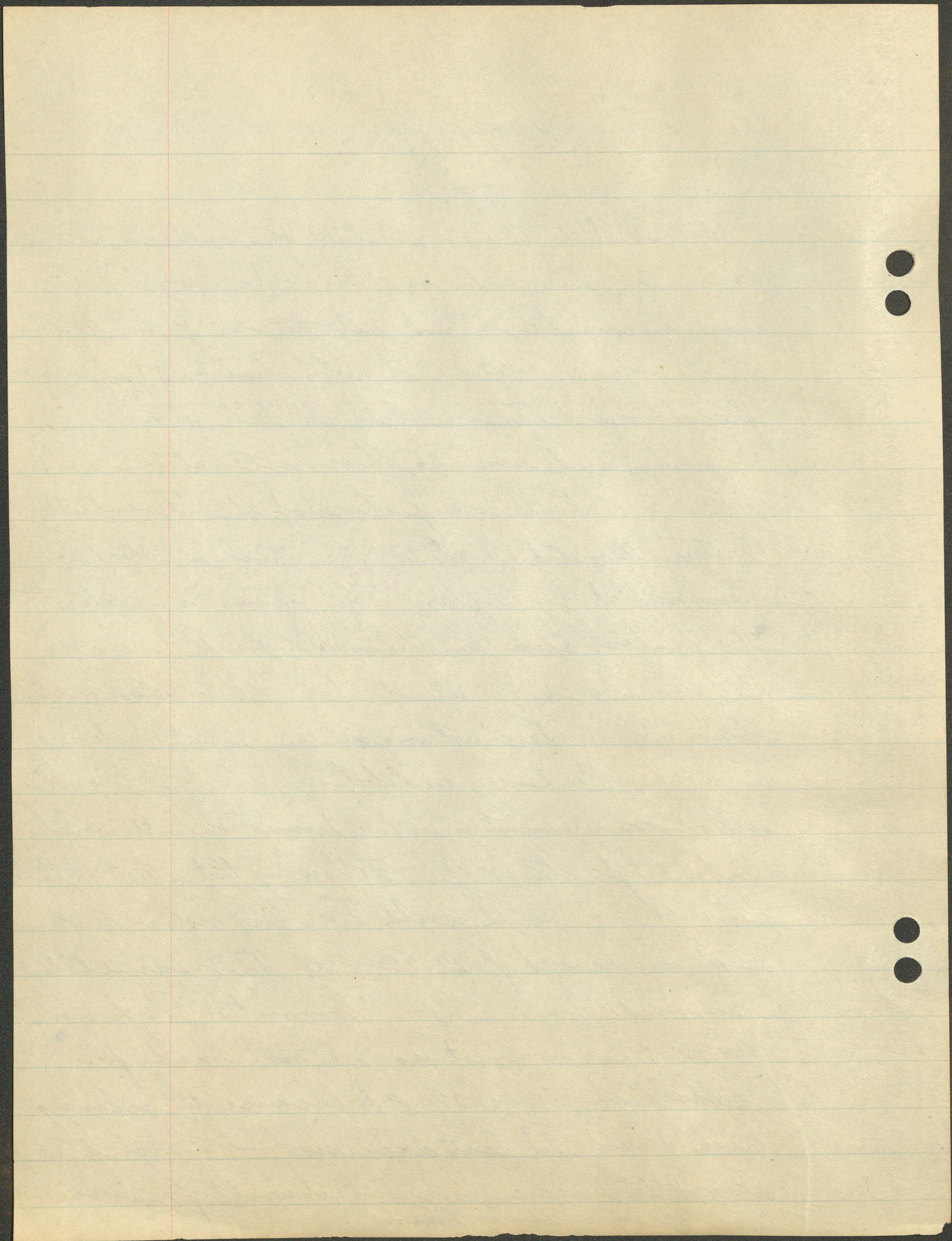
THE UNIVERSITY OF CHICAGO
LIBRARY

THE UNIVERSITY OF CHICAGO
LIBRARY

THE UNIVERSITY OF CHICAGO
LIBRARY

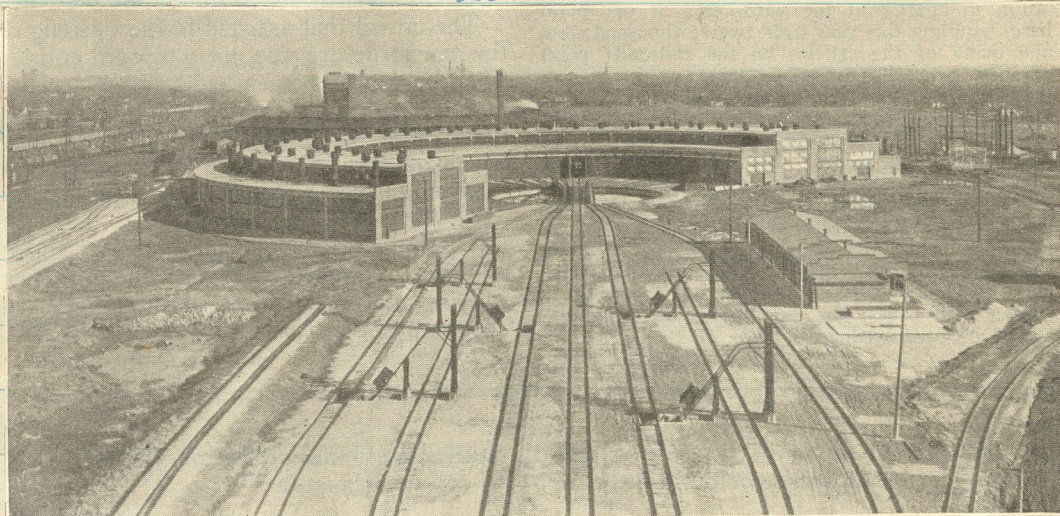
Illustrations

Illustration 26 is a picture of a modern round-house. In the center is a turntable so that the engines can be turned into ~~the~~ one of the tracks, which branches from it. Illustration 27 shows a freight yard. This is where all of the freight cars are sorted and sent to their destinations. In the 28th illustration is a picture of the Twentieth Century Limited about to leave Chicago, which was transmitted by telephone. This train completes the fastest run in the world for the number of miles it goes. In illustration 29 is ~~some~~ picture of some of the locomotives in the recent Baltimore and Ohio Centenary exhibition. The first locomotive is No. 9000 the most powerful locomotive in the world in 1923 for its weight. Following that is No 999 the fastest locomotive in the world. This locomotive made an official record of 112.5 M. P. H. The nearest to that was made by an English locomotive, which made 102 M. P. H. Locomotives are not made for speeds higher than 80 M. P. H. because the ordinary track would not last under such strain and also if there was an accident it would far worse than if by a slow train.



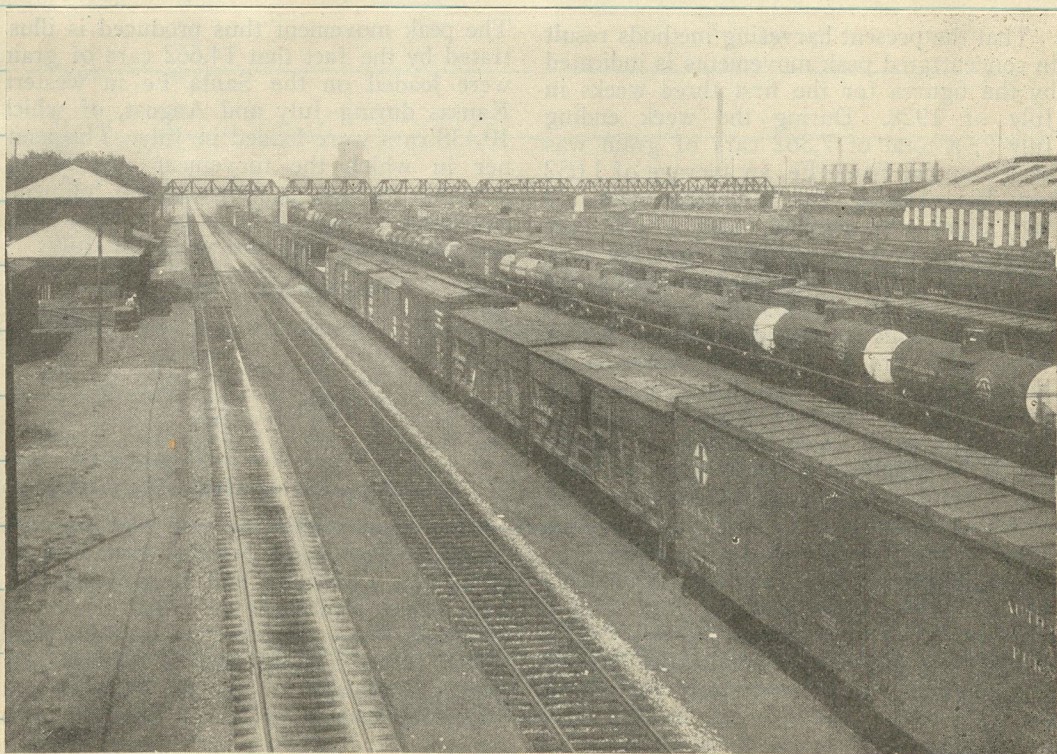
Views

26.

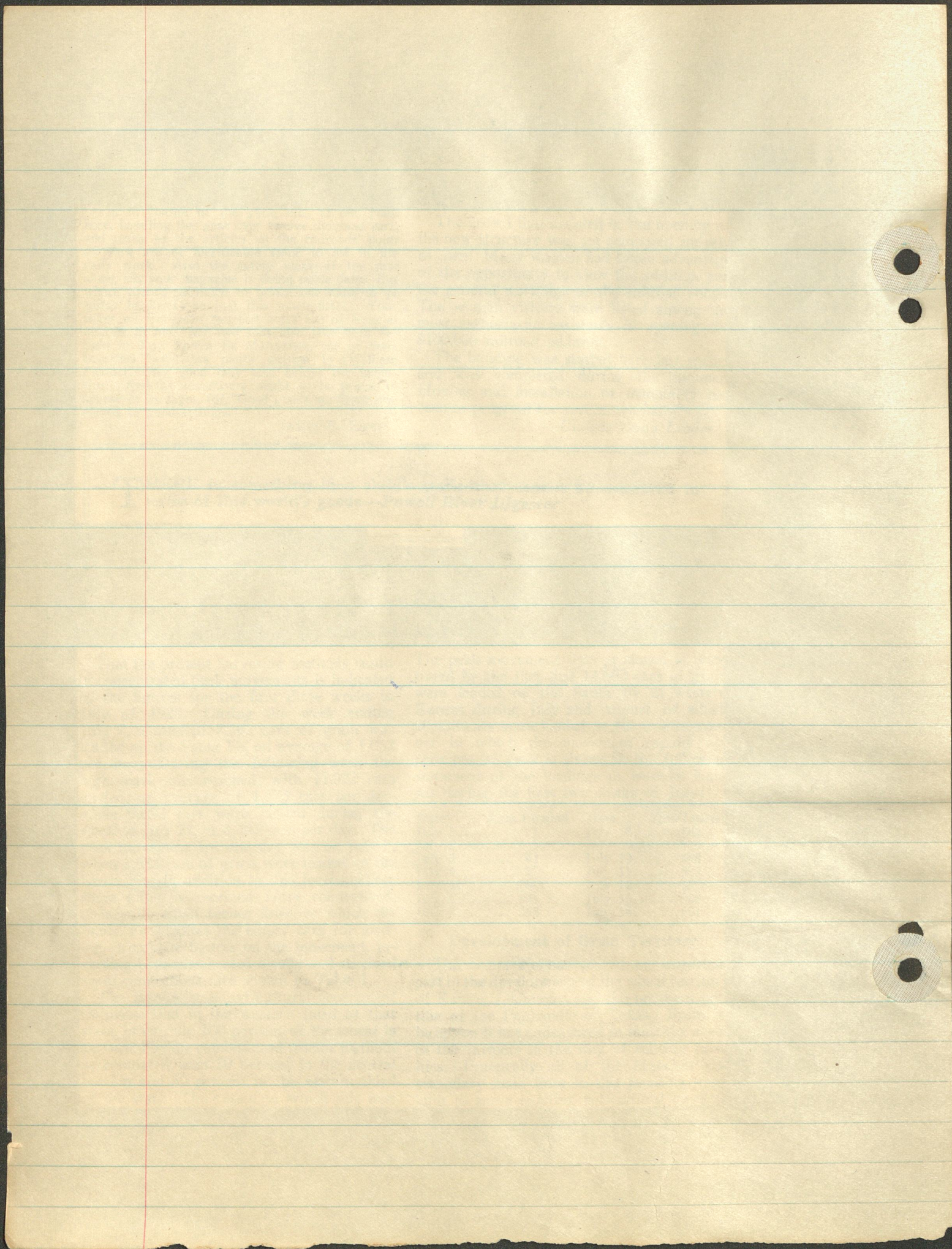


ROUNDHOUSE

27



Freight yards



Views 28

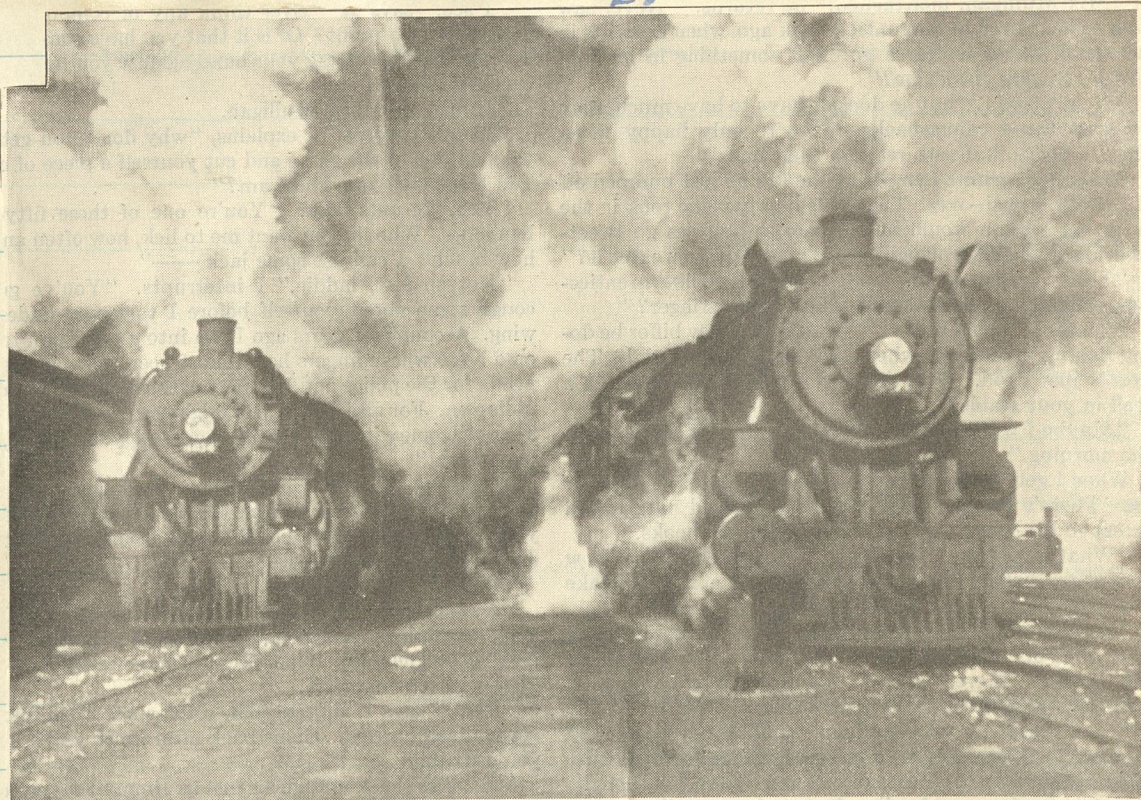


PHOTO. BY HERBERT PHOTOS., INC., N. Y. C.

Two Sections of the Twentieth Century Limited About to Leave Chicago. This Photograph Was Transmitted by Telephone From Chicago to New York and Was the First Train Photo. to Go Over the Wire

29

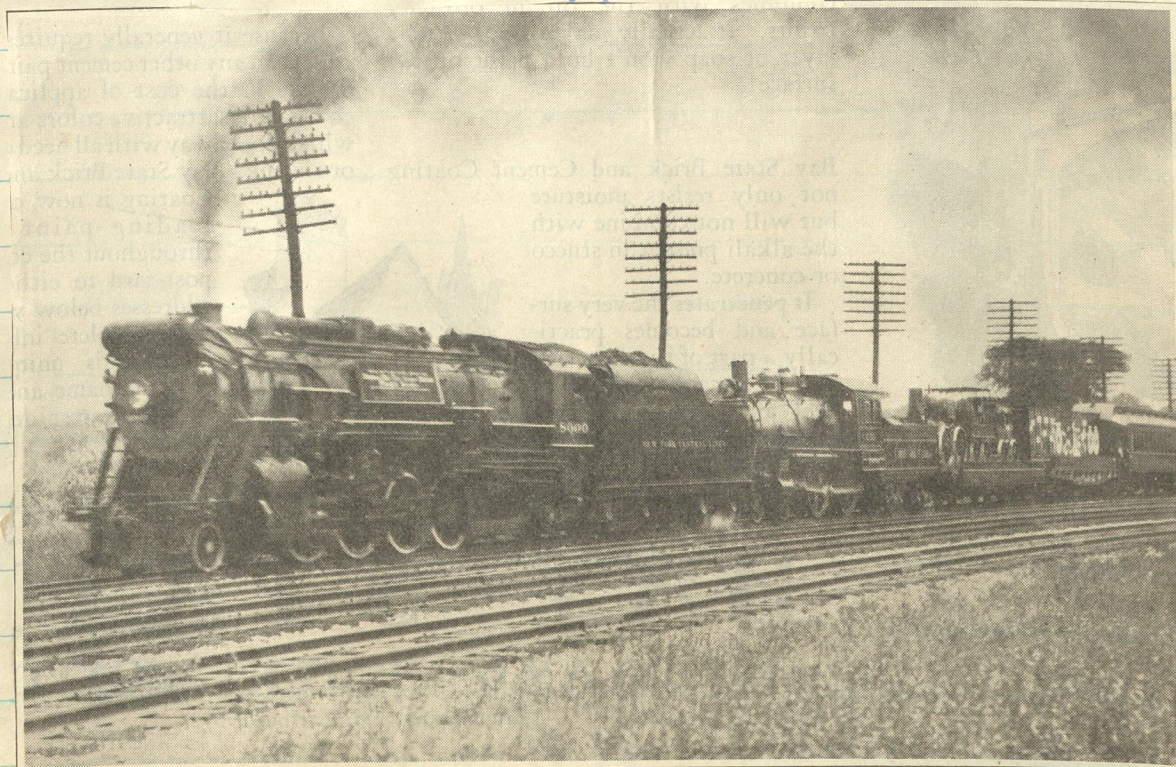
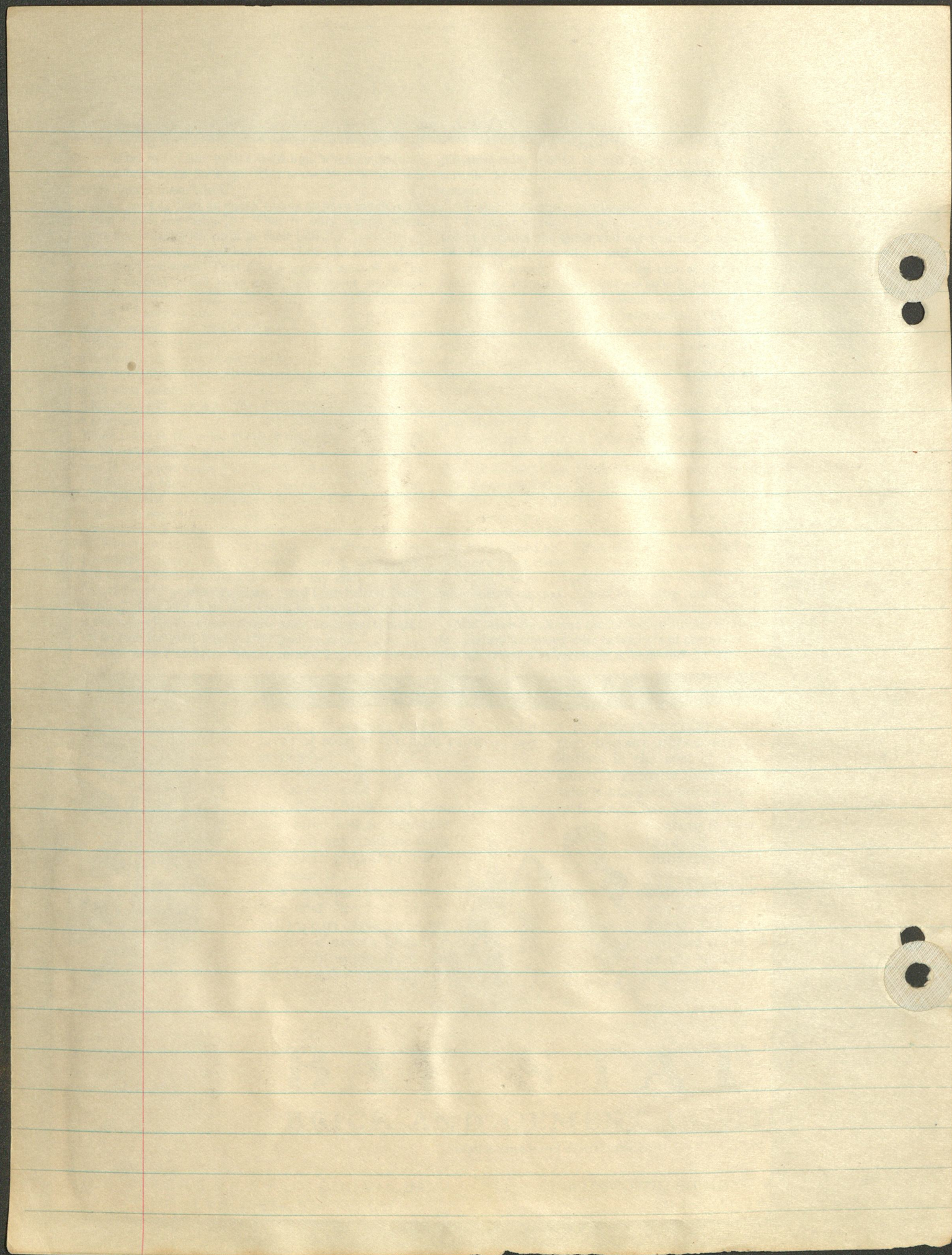


PHOTO. BY HERBERT PHOTOS., INC., N. Y. C.

Engine 8000, in 1923 the Most Powerful Locomotive in the World for its Weight; 999, Which Made the World's Record of 112.5 Miles Per Hour in 1893; and the DeWitt Clinton Train of 1831



Views

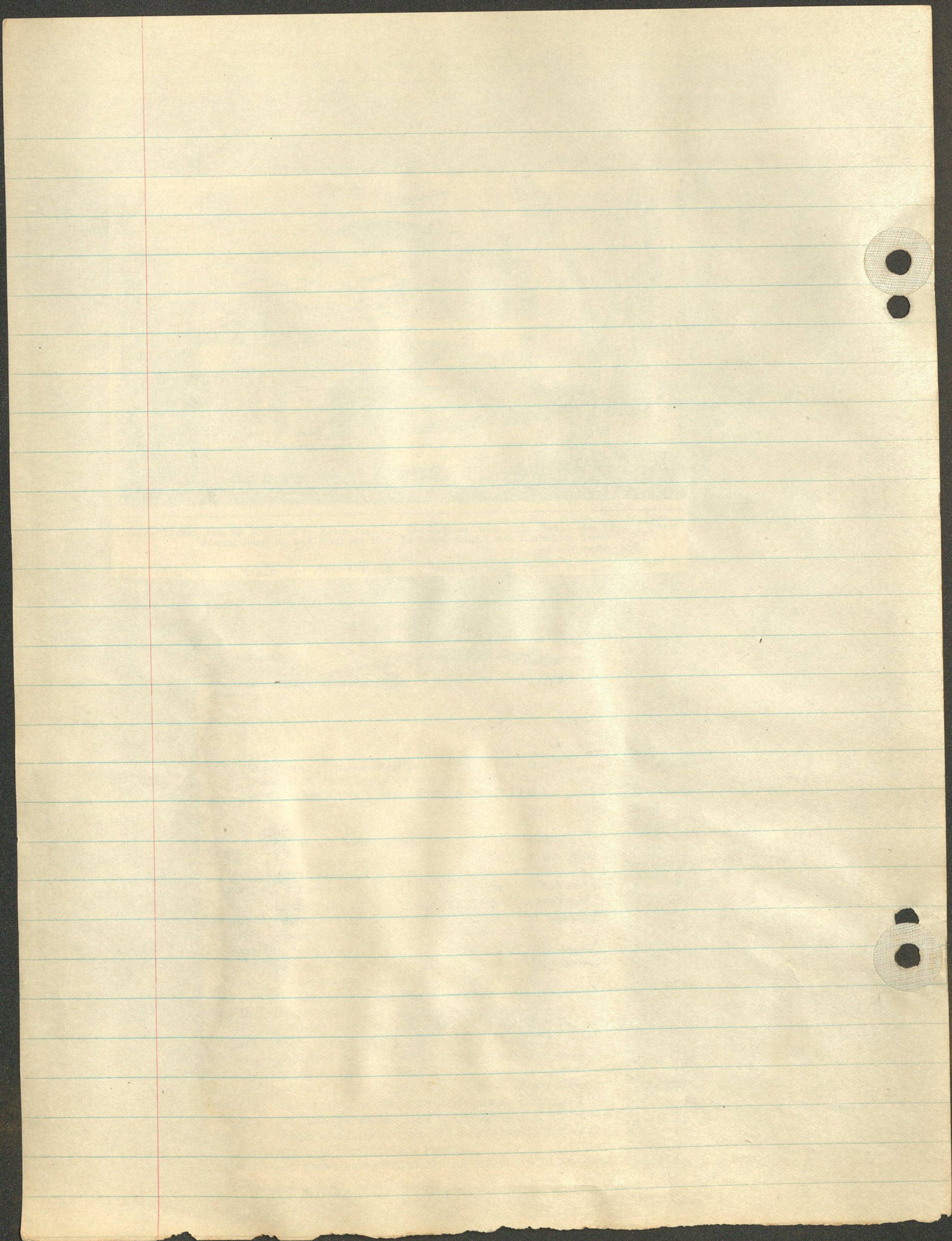


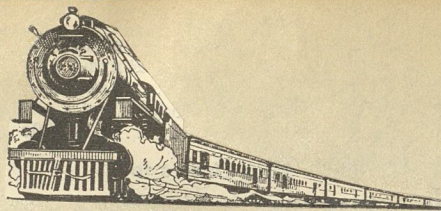
A Train of Locomotives, Hauled by Two of Their Number under Steam, Starting across the Country for Delivery to a Western Railroad; the Engines Are Destined for Freight Service



PHOTO. ILLUSTRATORS

The Boardwalk Flyer of the P. & R. Operated Under an 85-Mile-an-Hour Speed Limit Between Camden and Atlantic City

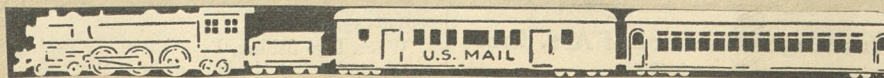


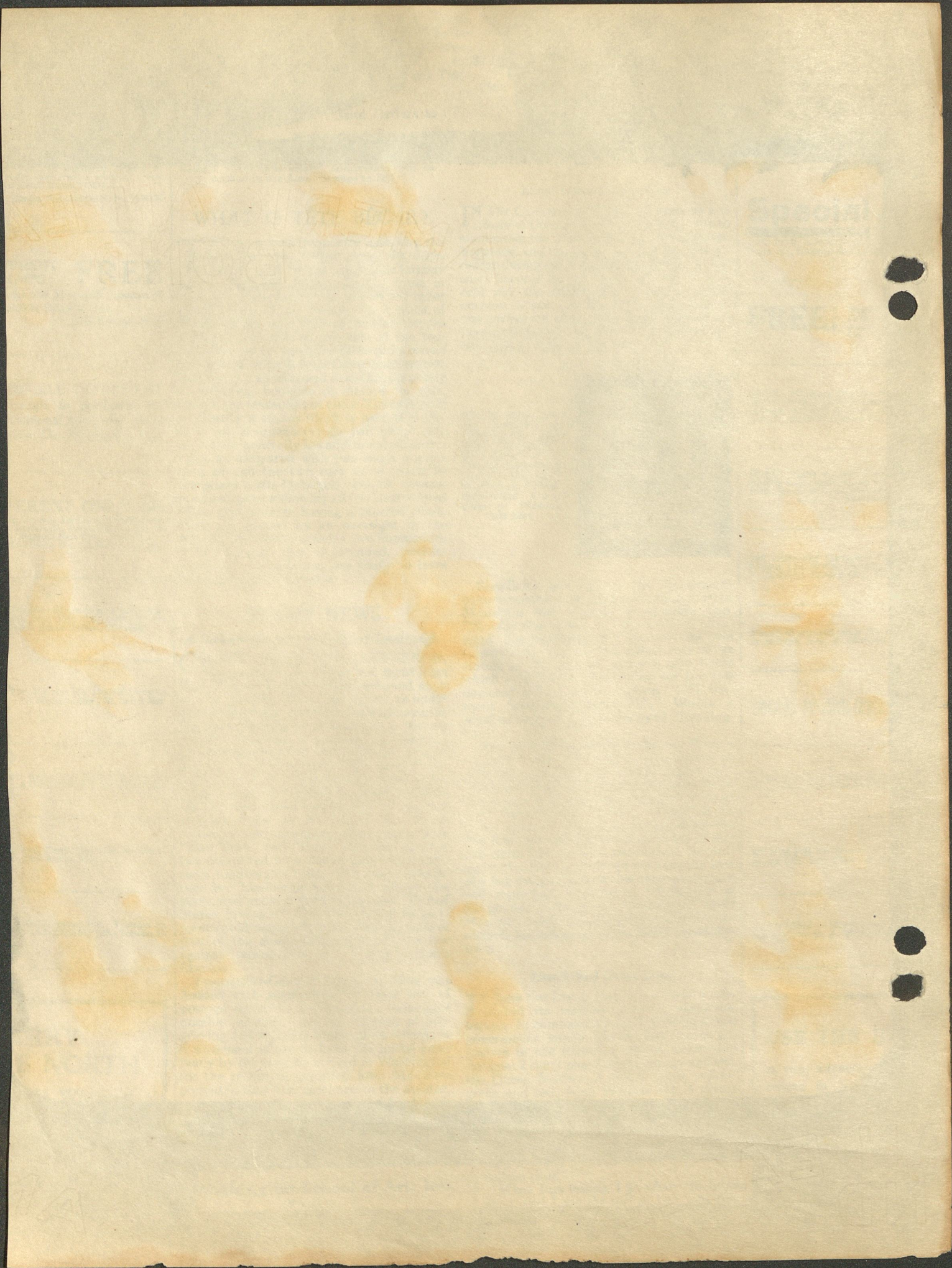


Photograph by Ewing Galloway

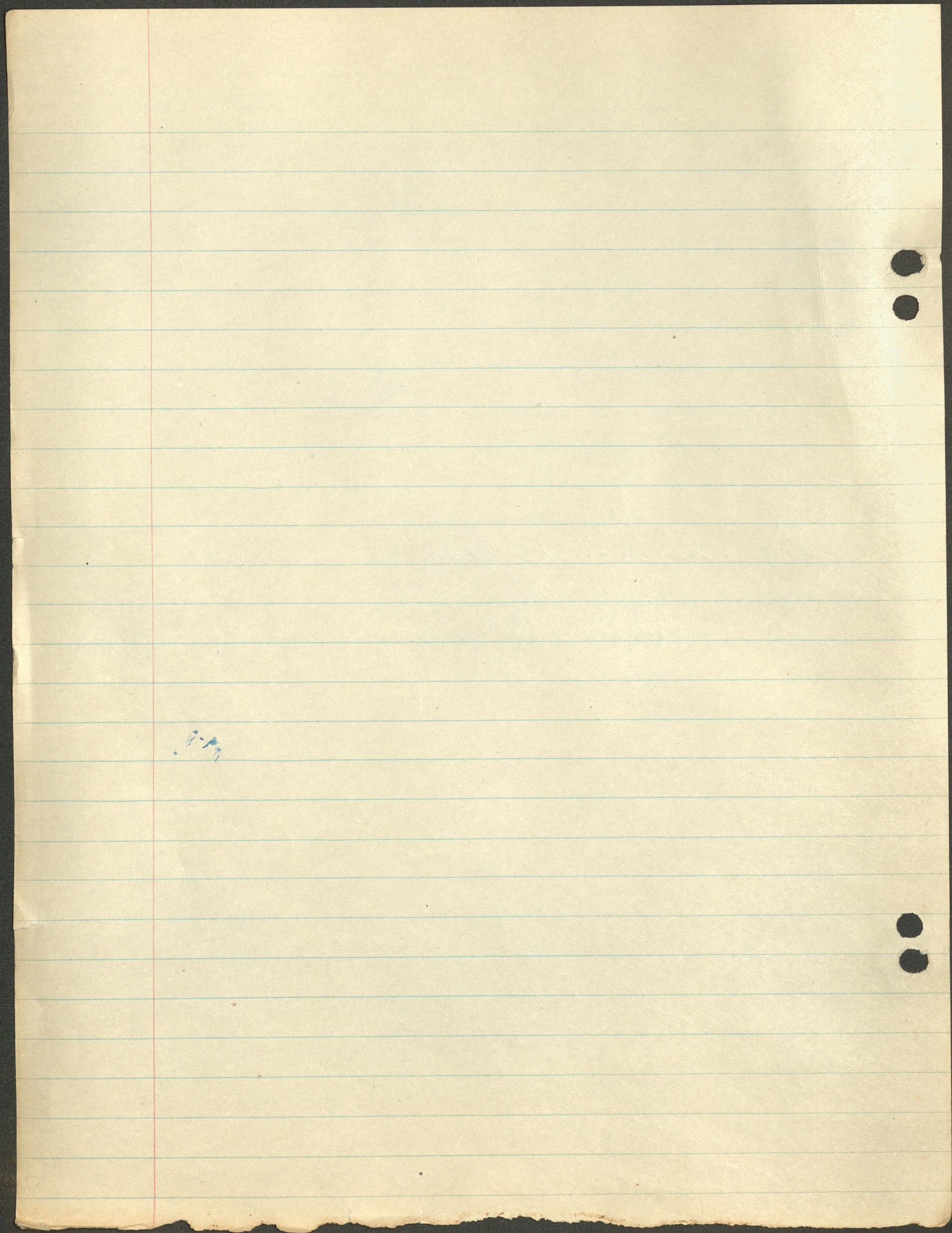
SKY SCRAPERS IN EMBRYO

An ore train from the Mesaba Range, in Minnesota, loaded with iron that the mills will turn into steel beams for great buildings





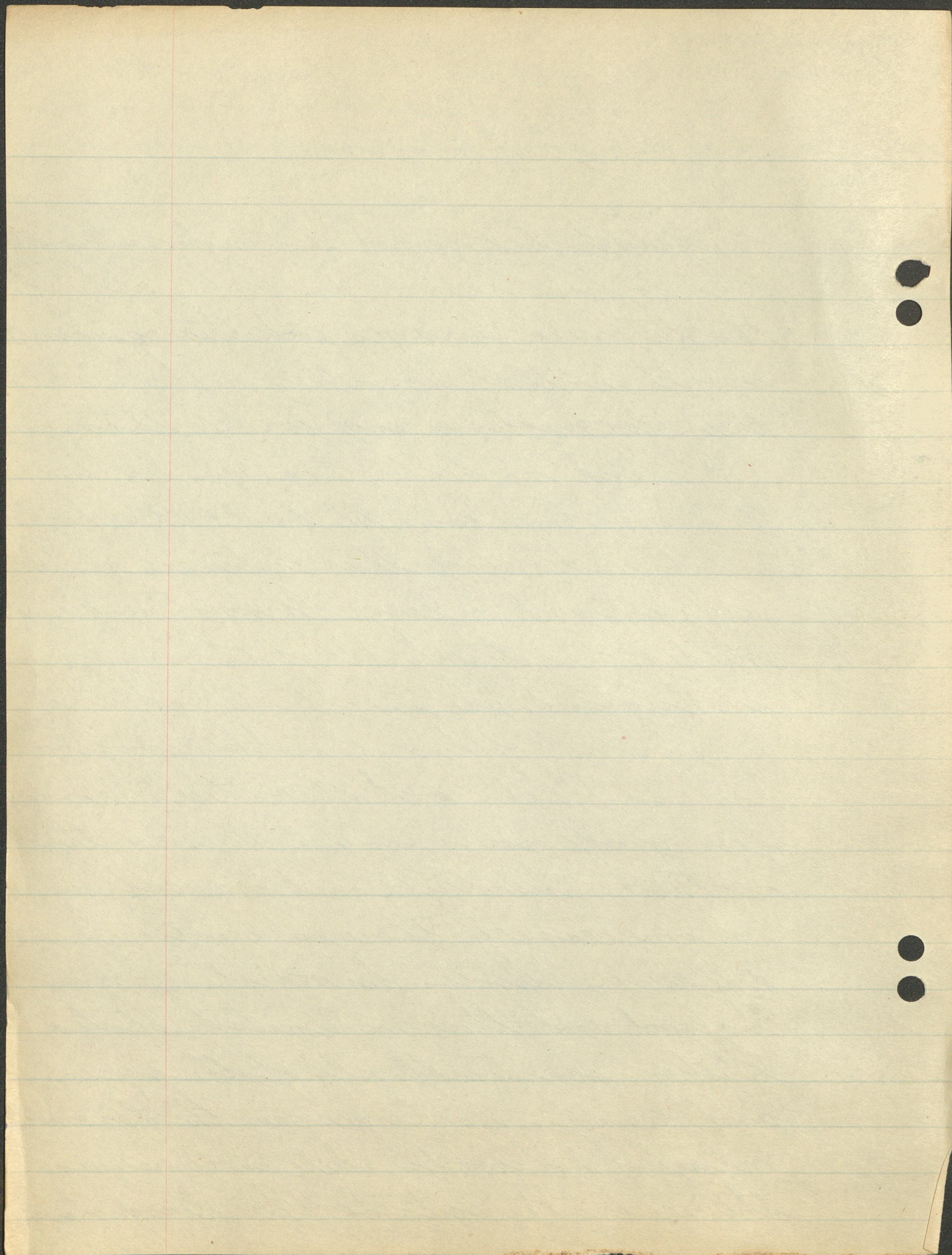
Great Britain, Europe &
Other Countries Having Railways



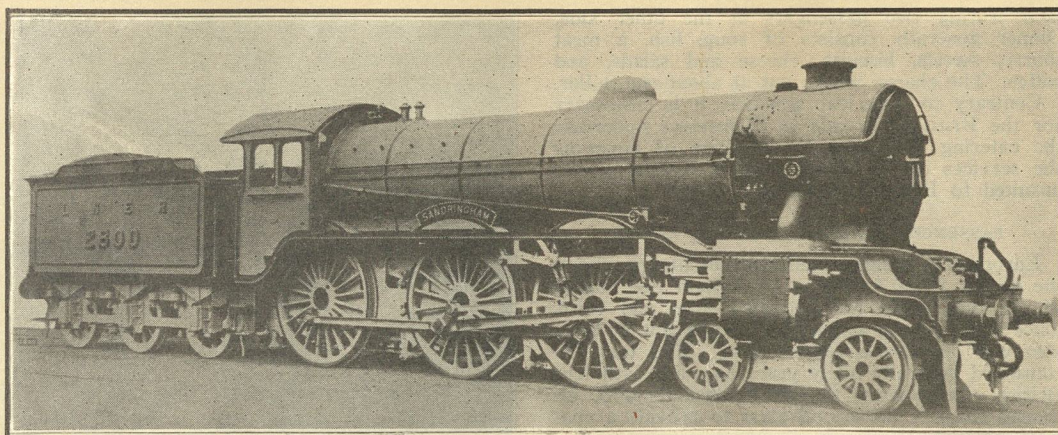
Allan Youell.

English Locomotives

England, being one of the first countries to have railroads built all of the tunnels, bridges and other equipment small, so that now they can't build their locomotives any wider than 6 ft. and no higher than 13 ft. 6 in. In America the locomotives can be built 16 ft. 6 in. high and 7 ft. wide. Also their distances are not very great and so large locomotives are not needed. Practically all of the railways in England are fenced in and it is a criminal offence to walk along by railway tracks and also there are very few grade crossings in that country, so that a headlight and cowcatcher are unnecessary. There is another great difference between locomotives in England and those in United States, that is, practically all of the pipes and working parts are in the locomotive on English Railroads, while in America they are on the outside. The locomotives



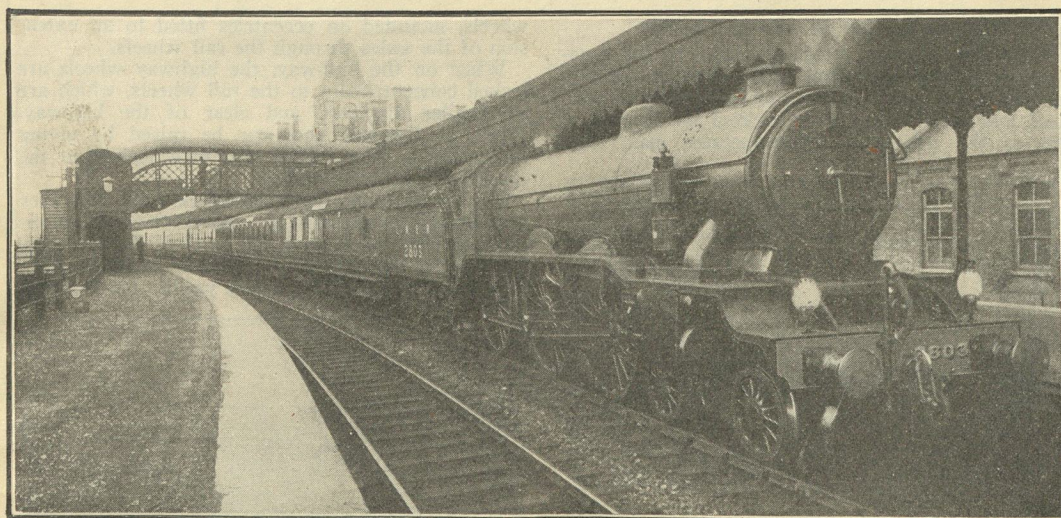
STANDARD ENGLISH PASSENGER LOCOMOTIVES
4-6-0 "Sandringham" Class
London North Eastern Railway



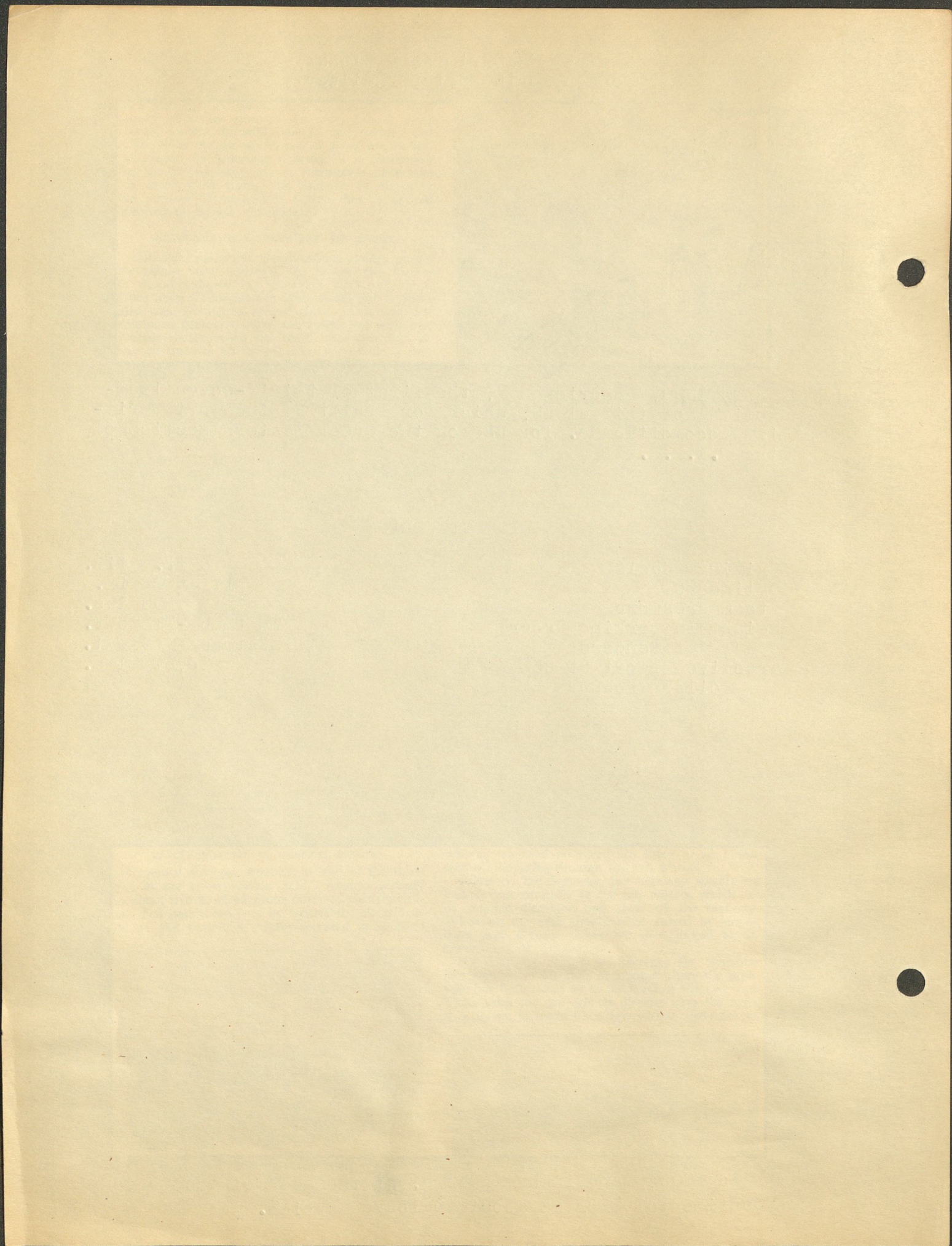
No 2800, "Sandringham", the first of thirty-seven locomotives of this class, which were built by the North British Locomotive Co. for use on the Great Eastern section of the L.N.E.R.

LEADING DIMENSIONS

Driving Wheels	6 ft. 8. in.
Cylinders	17½ x 26 in.
Steam Pressure	200 lbs.
Weight In Working Order	76 tons - 13 cwt.
" Of Tenders	39 tons - 8 cwt.
Tractive Effort At 85% Boiler Pressure	25,379 lbs.



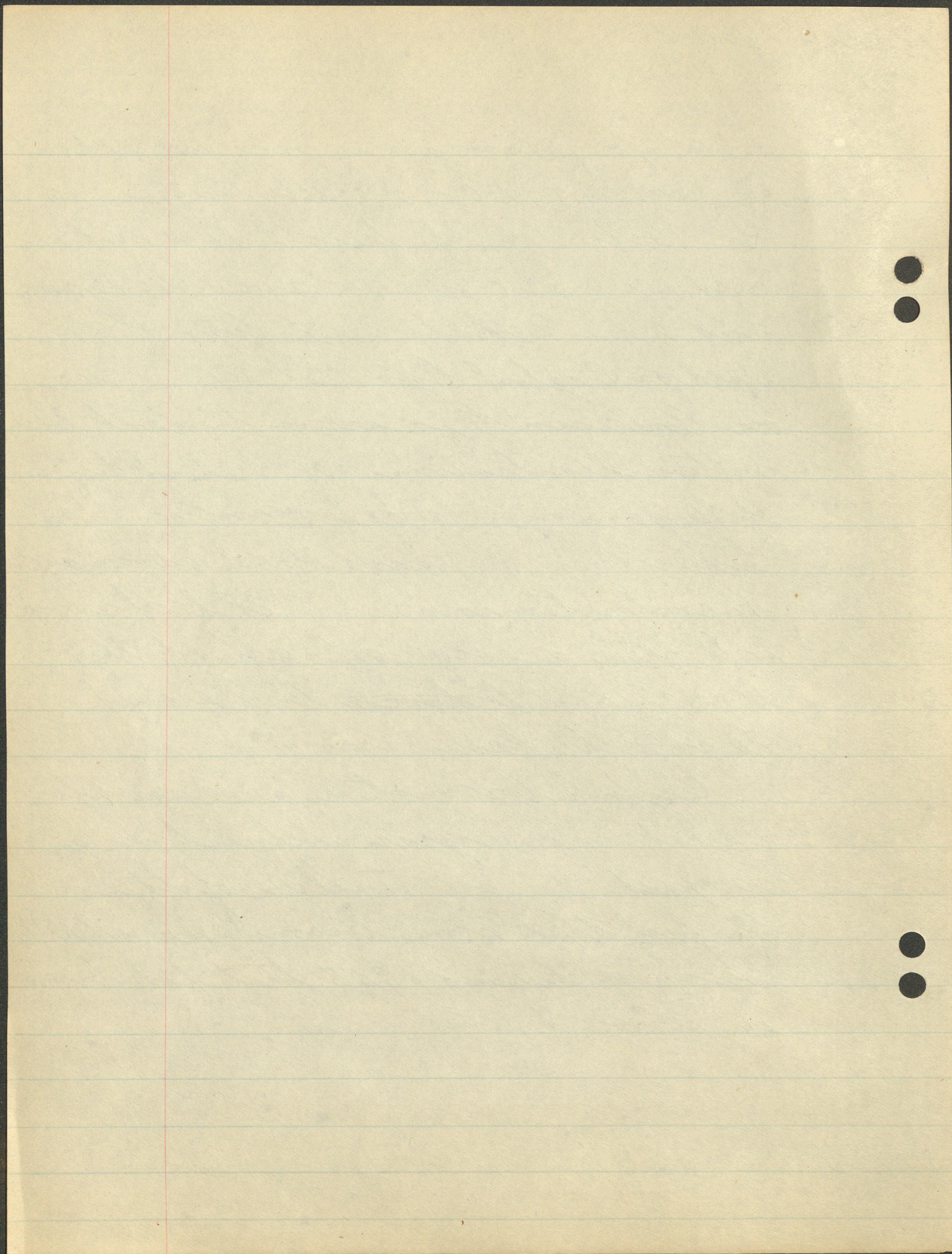
No 2803, "Sandringham" Class, at the head of the London Continental Express about to leave Harwich.



Allan Youell.

used for passenger service in England are usually 4-4-0, 4-4-2, Atlantic type, 4-6-0 and 4-6-2 Pacific type. The freight locomotives used are 0-6-0, 0-8-0, 0-10-0, 2-6-0, 4-6-0, 2-8-0, 2-10-0 and 2-8-2 Mikado. One type of locomotive used on English Rys. that ~~are~~ not seen on American Rys., ~~are~~ is the tank locomotive. Illustrations 32, 33 show ^{two} types of ~~the~~ passenger tank locomotives. The tank locomotives have several advantages, mainly, they do not have to haul around with them a heavy coal-car and they do not have to ~~have~~ a turn around to go either backwards or forwards.

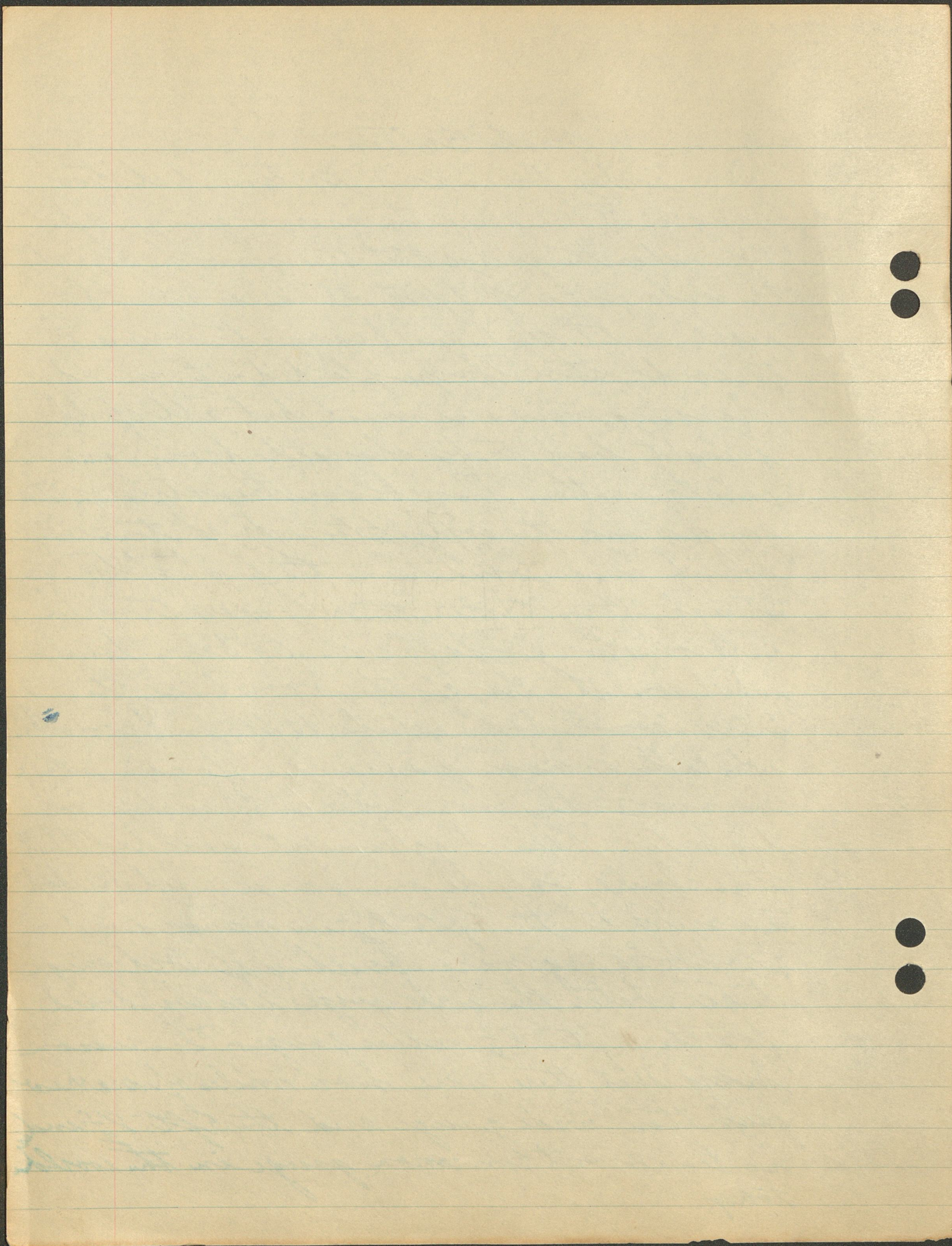
English locomotives are used for a great many years before being scrapped. An illustration of this is the fact that some locomotives were scrapped during 1928 that had been in service ~~for~~ since .



Allan Youell.

Great Britain

In early times Great Britain had two gauges. These were the narrow gauge 4 feet 8½ inches the gauge that they now have, and the wide gauge of 7 feet. This was all right until the lines began to connect to each other. The people didn't mind changing trains so much, but all of the freight had to be changed from one car to another. Then began the battle of the gauges and the competitors tried to see which gauge could run the fastest trains. It was thought that the only way to make a locomotive go fast was to have large wheels on it. One of the locomotives the "Hurricane" had wheels 10 ft. in diameter while the average passenger locomotive in use to day has wheels 80 inches in diameter. Then Parliament decided that there should only be one gauge and decided it would be the 4 ft. 8½ in gauge and prohibited any more building of wide gauge track. Later the wide gauge was abandoned for the 4 ft. 8½ inches gauge. The reason being that there were more miles of narrow gauge than wide gauge and the 4 ft 8½ inches is the most common gauge in the world today.



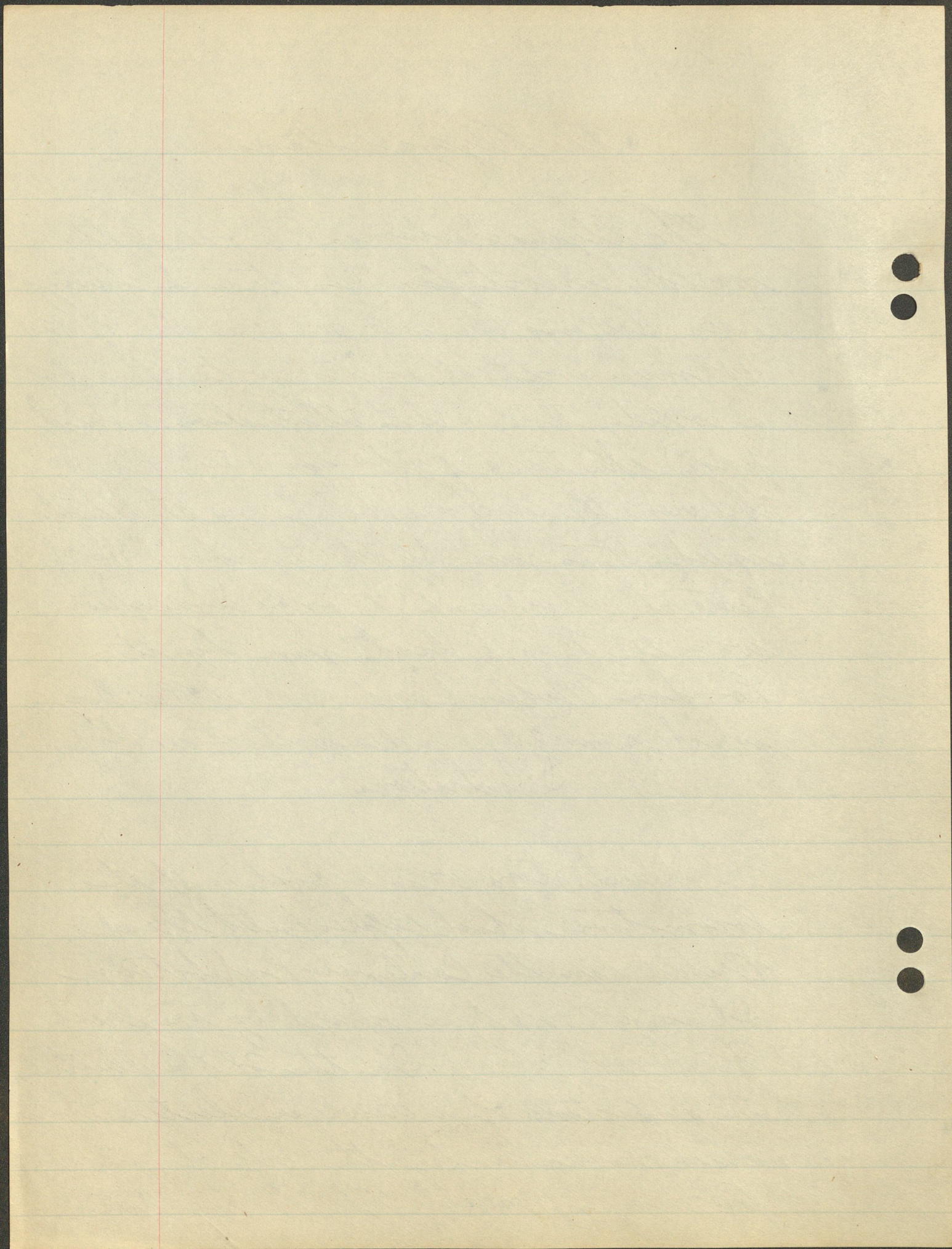
The Flying Scotsman

The Flying Scotsman is one of the worlds most famous trains, having run during the summer months of 1928 400 miles without a stop, with the aid of a corridor tender. (See illustration on next page). This train picks up water from between the tracks while going at a high speed. It is run by the London North Eastern Railroad and the only competitor was the Royal Scot run by the London Midland and Scottish Railways, which runs 299 $\frac{1}{4}$ miles without a stop.

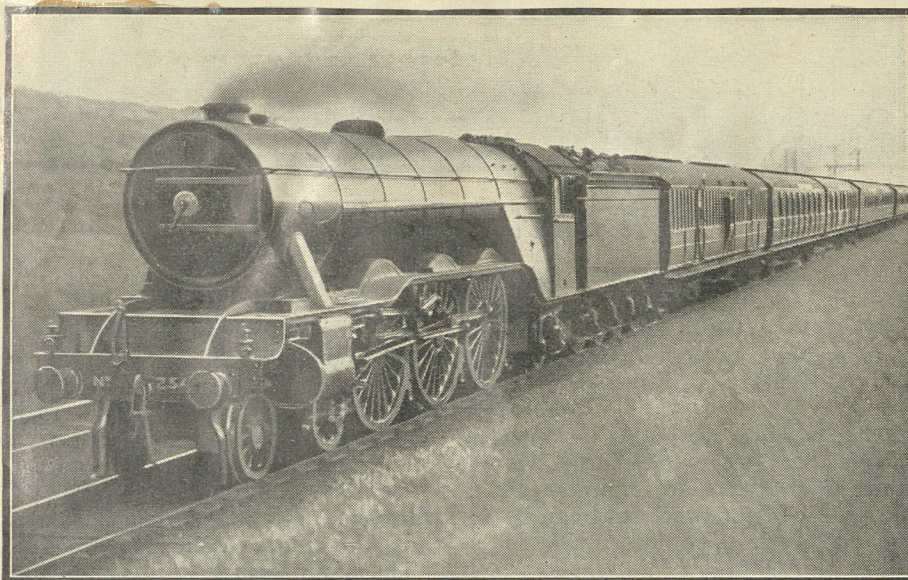
Illustrations

Illustration 37 is a picture of the locomotive which represented Great Britain in the Centenary Exhibition.

It is a 4-6-0 type owned by the Great Western Railway. In the 38th illustration is a picture of a crewless electric train which runs under the city of London for carrying mails. The trains are



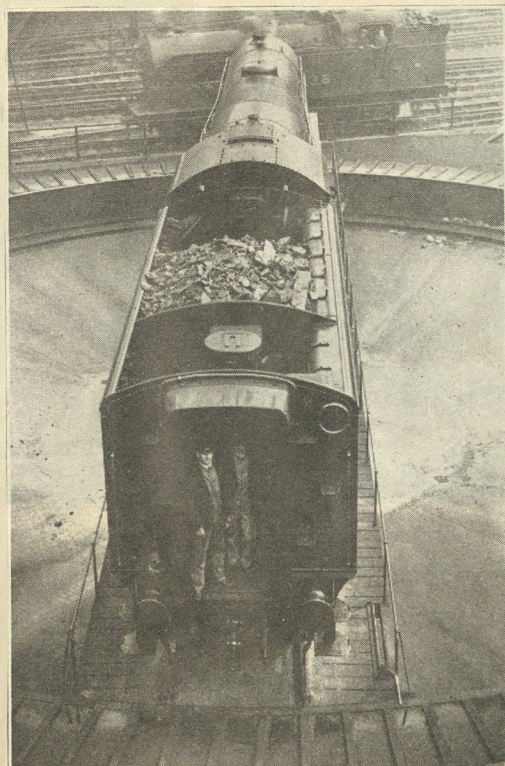
The Flying Scotsman - L. N. E. Ry.



Photo]

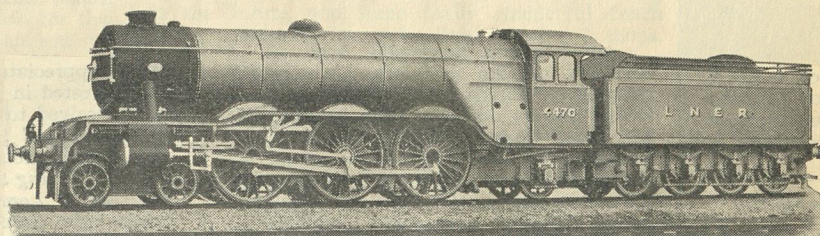
[F. E. Mackay

The down "Flying Scotsman" passing Hadley Wood. Engine No. 2543



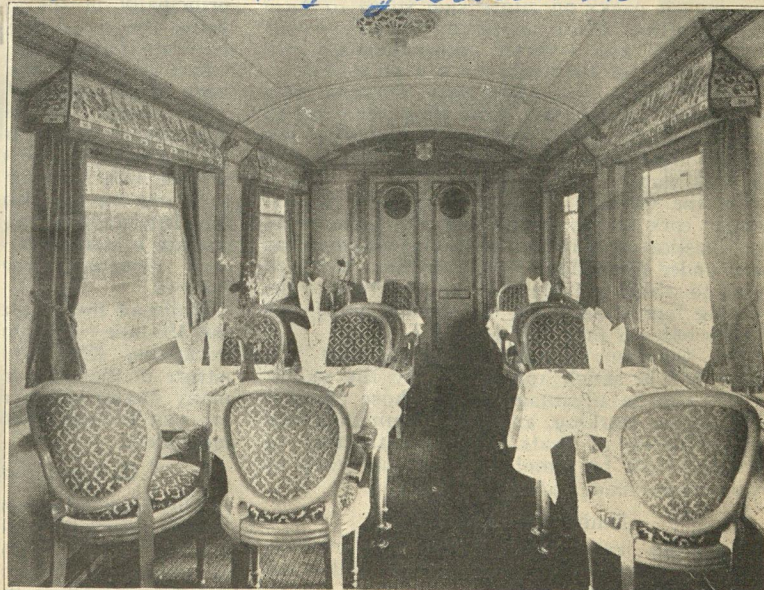
A NOVEL DEVICE

The corridor tender utilized on the L. & N. E. Railway of England enables through non-stop passenger runs of 400 miles to be accomplished with ease. The corridor may be seen running along the right-hand side of the tender, affording connection between the train and the cab of the locomotive.



A Famous L.N.E.R. Locomotive Engine, No. 4470 "Great Northern"

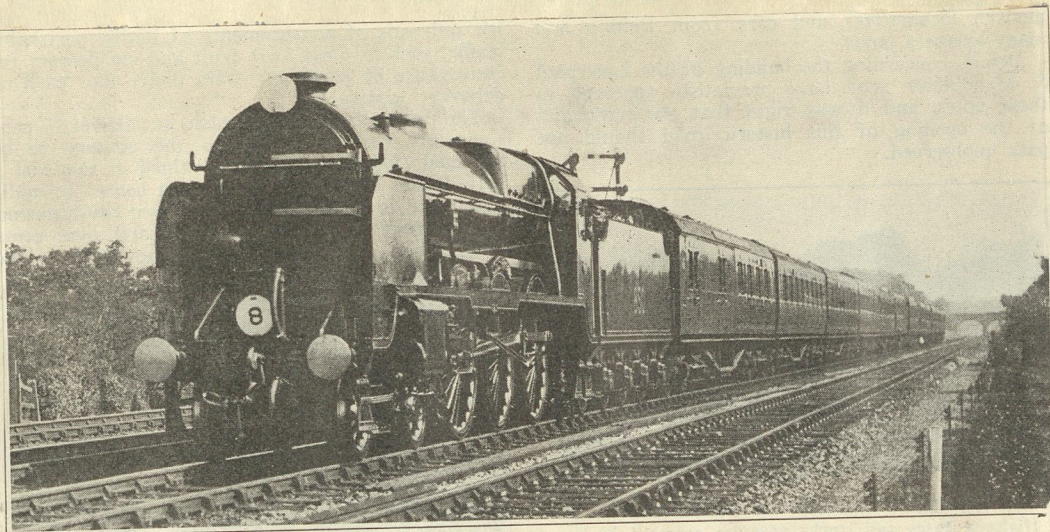
Type of locomotive used to haul the Flying Scotsman



A DINER DE LUXE

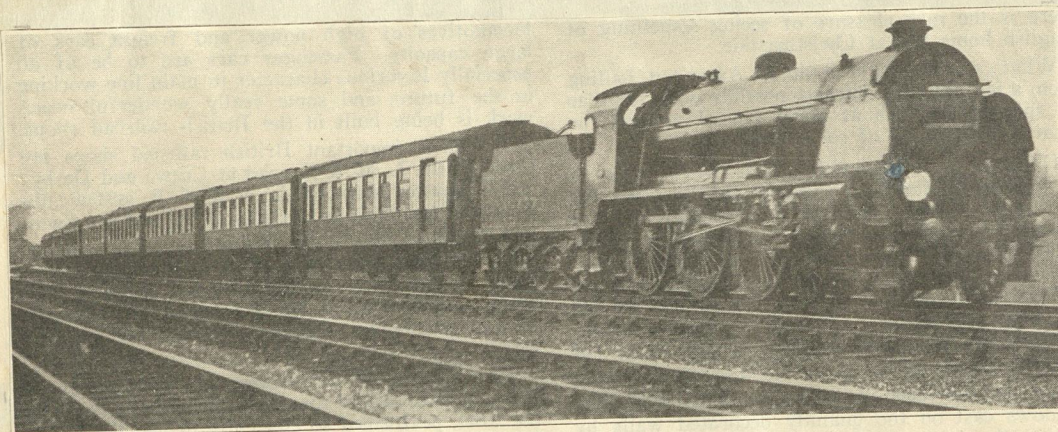
Here's a new dining-car on the Flying Scotsman between London and Edinburgh, which introduces a new luxury note

Famous Trains of the Southern Railway



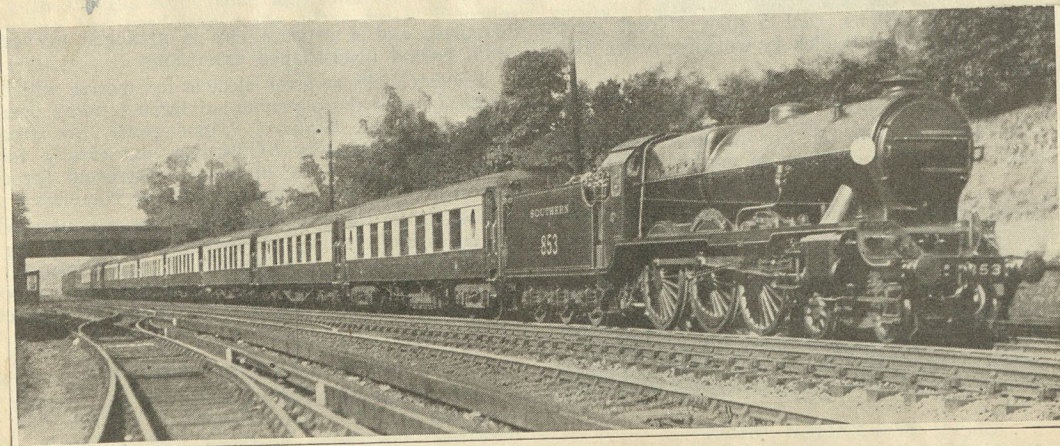
HERE'S BRITAIN'S "ATLANTIC COAST EXPRESS"

Connecting London with the southwestern portion of England, which includes the beautiful counties of Devon and Cornwall, fast daily trains are operated by the Southern and Great Western railways. The Atlantic Coast Express of the Southern road and the Torbay Limited of the Great Western are two of the most important trains in the service. The first named operates from the Waterloo terminal in London and the latter from the Paddington station in the fashionable west end.



THE PRIDE OF BRITAIN'S SOUTHERN RAILROAD

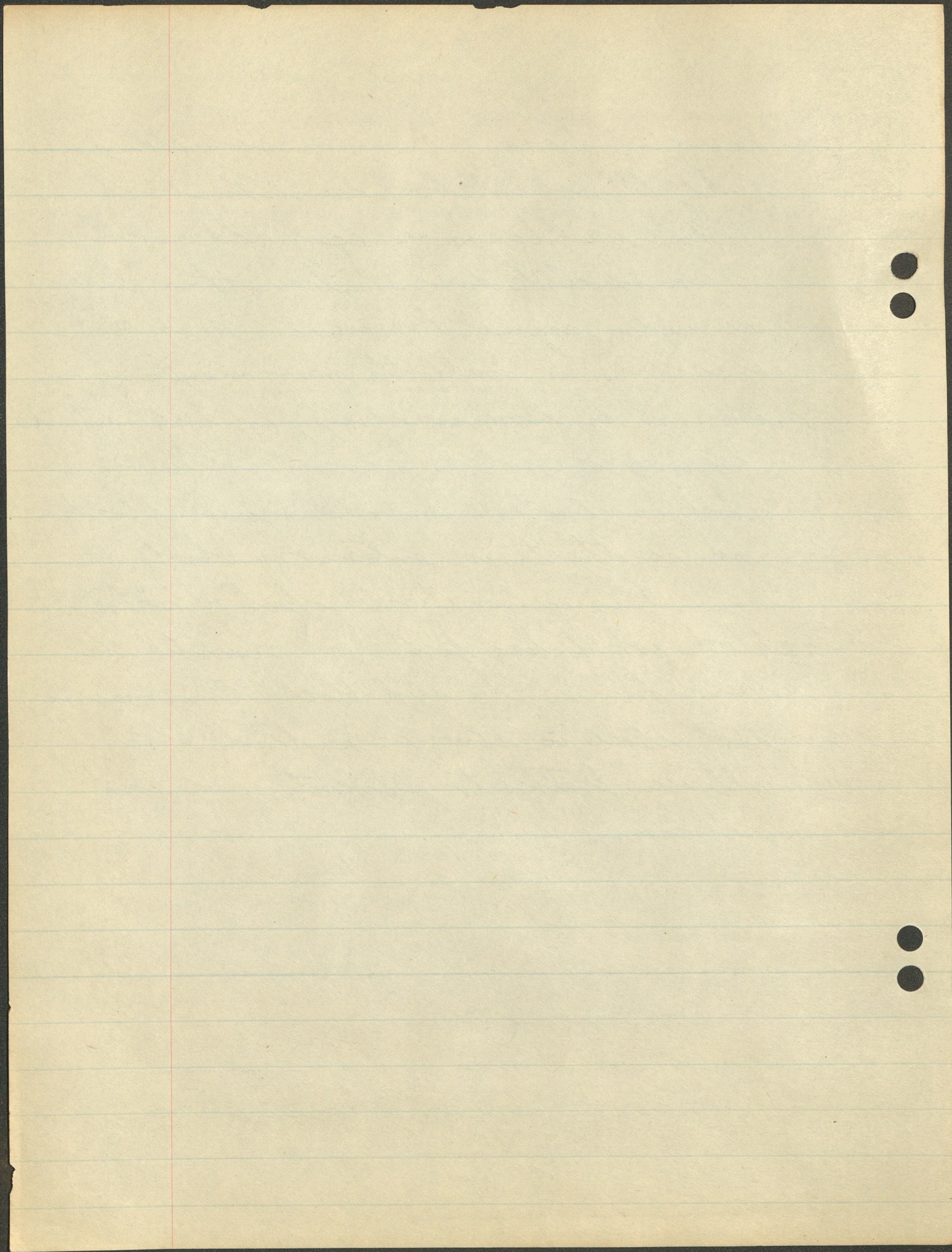
The "Southern Belle," fast daily pullman train between London and Brighton, is one of Britain's most famous named trains. For more than twenty years it has covered the daily 51-mile run in each direction in sixty minutes, and the train is most popular among London businessmen living on the south coast. Soon the London to Brighton tracks will probably be electrified and electric locomotive will haul this historic British train.



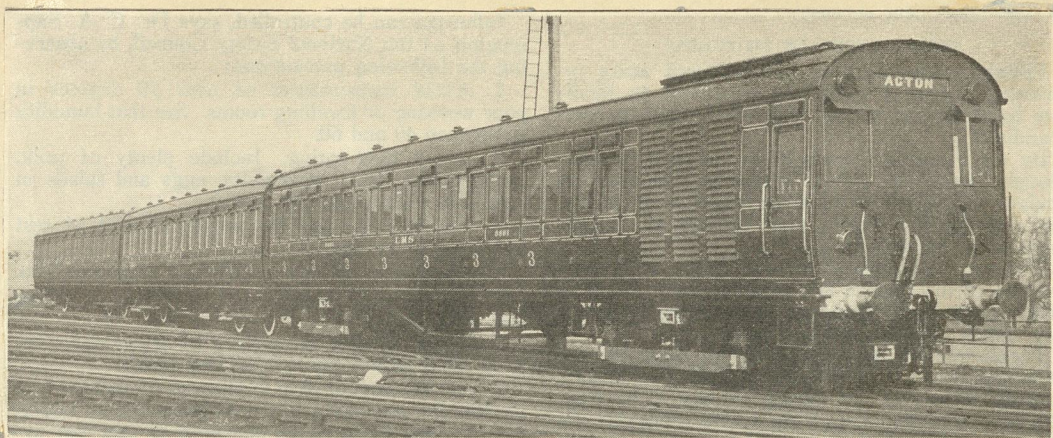
THE "GOLDEN ARROW" CONTINENTAL PULLMAN LIMITED

Fast and luxurious passenger movement between London and Paris is given by the Golden Arrow pullman service operated by the Southern Railway of England and the Northern Railway of France. Above is depicted the 10:45 a. m. Golden Arrow pullman from Victoria Station, London, to Dover Harbor, operated by the Southern road. The train shown is drawn by a 4-6-0 locomotive named Sir Richard Grenville. This is one of the famous Nelson class of fast passenger machines.

operated from a building something like the signal box in illustration 39. The buildings are equipped with an illuminated diagram, like those that are in the signal box (see illus. 39) so the operator can note the movements of the train. The line is equipped with automatic ~~stopping~~ control to prevent collisions. That is, the line is divided into blocks and as the train enters one block, the current is automatically shut off ⁱⁿ the block which has just been left until the train has left the said block. This means that there is always a dead block between trains to prevent rear end collisions.

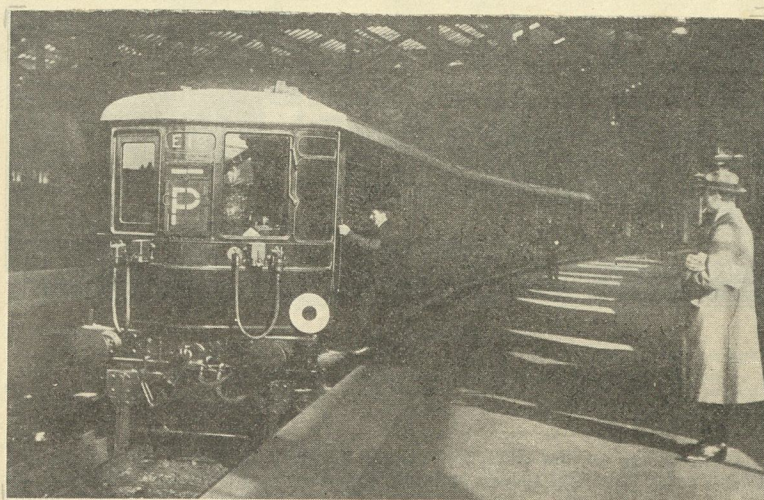


ENGLISH ELECTRIC TRANSPORTATION



A SMART ELECTRIC TRAIN

Three-car electric trains of this type operate on the London suburban tracks of the L. M. & S. road. Similar cars now are being built for use on newly electrified tracks in the Manchester area. The cars are of the compartment type, with a separate door to each compartment. This arrangement facilitates entraining and detraining, and speeds up working at busy periods.



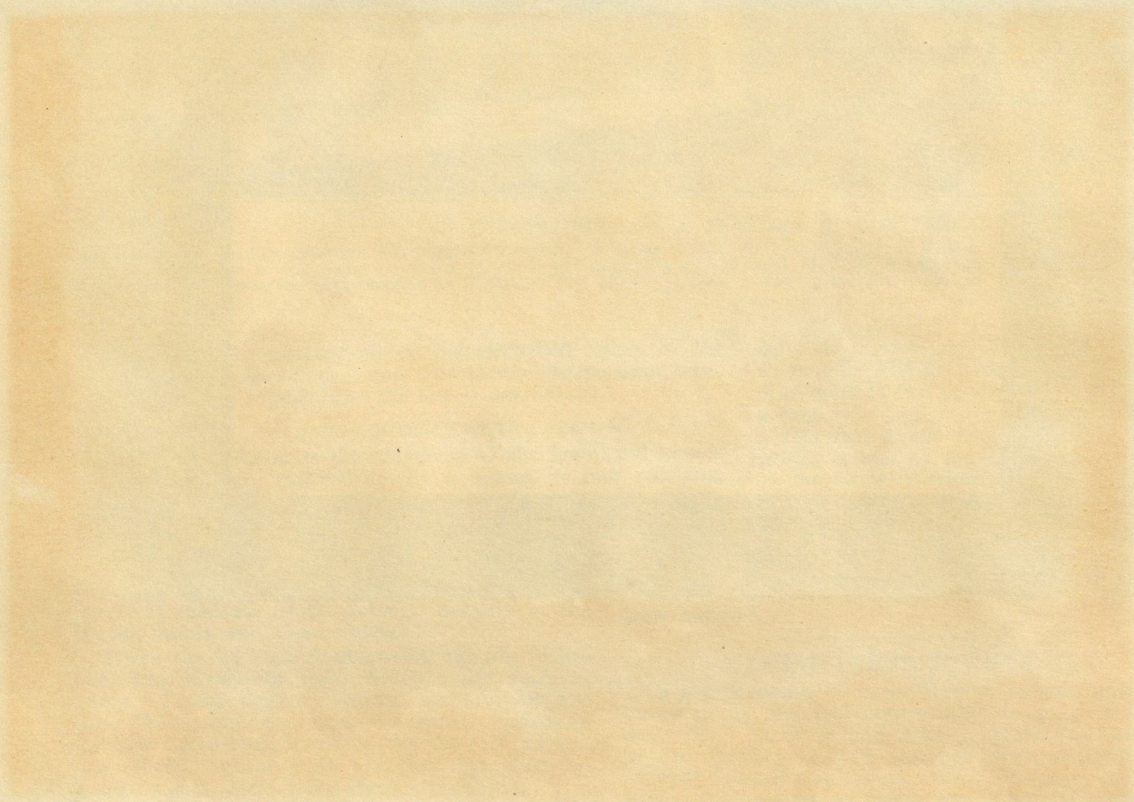
IN LONDON TOWN

Fast electric train of the Southern Railway leaving Waterloo terminal, London, for Wimbledon. The Southern Railway of England operates the largest individual electric suburban railroad system in the world.



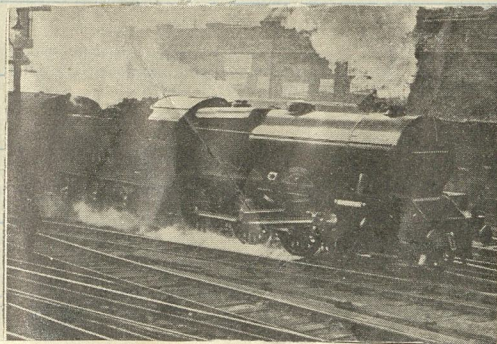
A TRAIN WITHOUT A LOCOMOTIVE

Trains without locomotives are becoming increasingly common in Europe. Above is depicted an electric motor train of the Southern Railway of England running in the London suburban services. Other locomotiveless trains operated by the British roads include numbers of rail motor cars of various designs, most of which are engaged in branch road haulage.



Great Britain

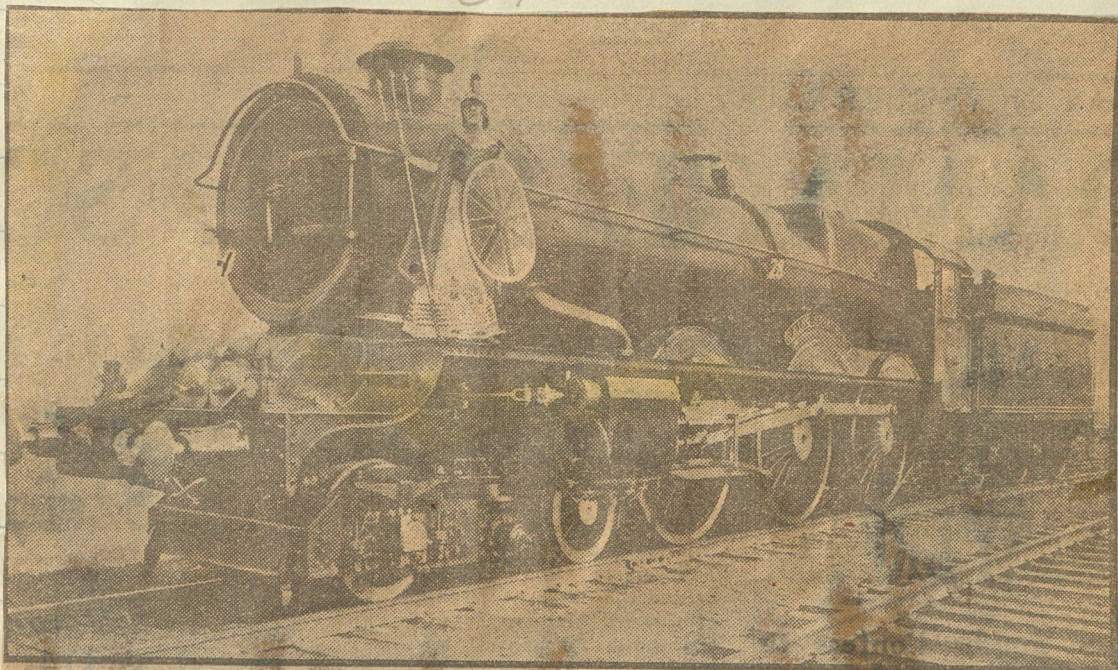
36



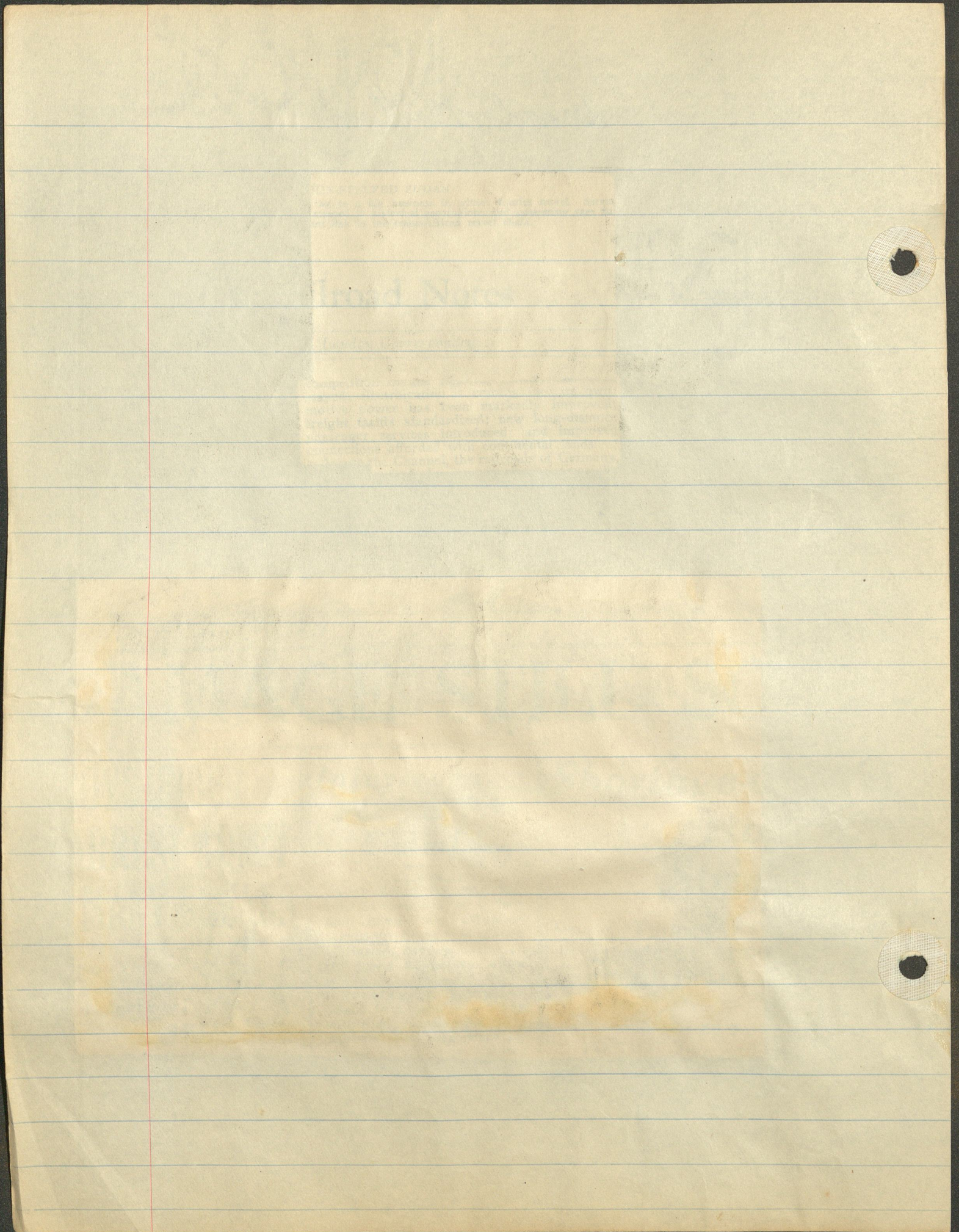
HERE'S THE ROYAL SCOT

Britain's crack long-distance express, which is here seen leaving Euston terminal, London, on its 299-mile non-stop flight to Scotland, makes the world's longest non-stop passenger run. It is the L. M. and S. Company's reply to the L. and N. E. Company's 268-mile non-stop schedule between London and Newcastle-on-Tyne.

37

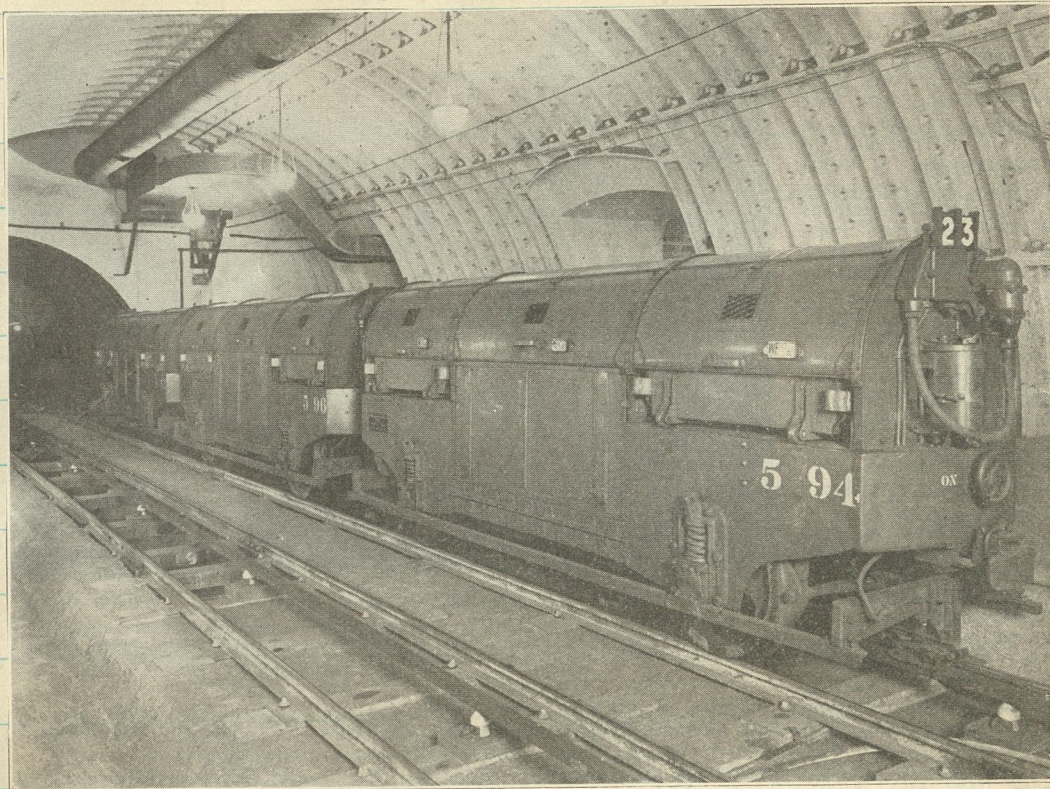


BEAUTY AND POWER are combined in this massive steel giant christened King George V., and exhibited at the Baltimore & Ohio Railroad centenary exhibition and pageant in Baltimore, Md. It represents the best in locomotives and attracted widespread attention. Miss Lillian Schueler, an employee of the Baltimore & Ohio, and representing Miss Britannia, was the general custodian of the engine.



Great Britain

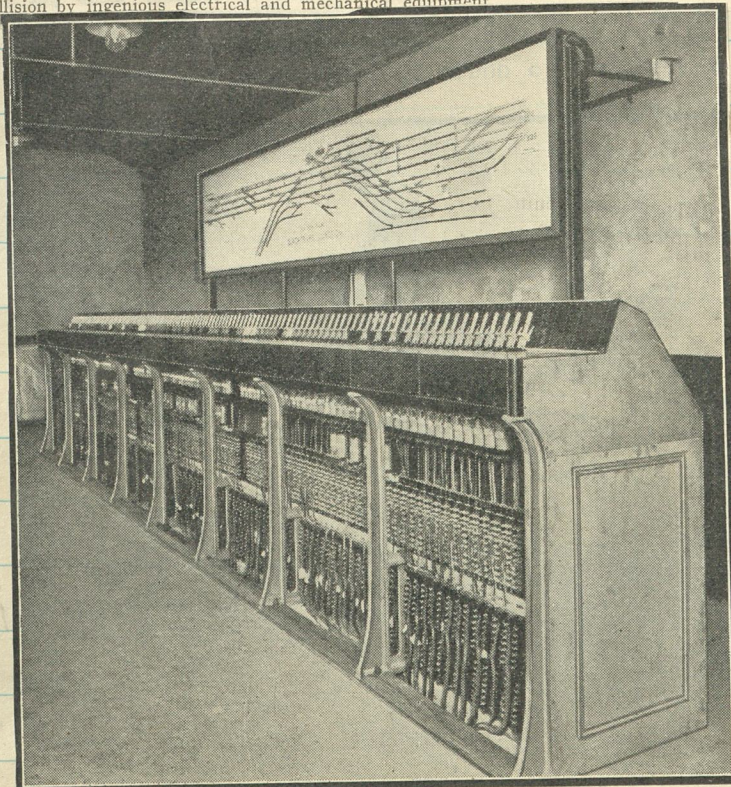
38



IT'S CREWLESS, TOO

Three-car train on the wonderful new tube railroad constructed beneath the city of London, England, to convey postal mails. No crews are required for train working, each train being electrically controlled and automatically protecting itself from collision by ingenious electrical and mechanical equipment.

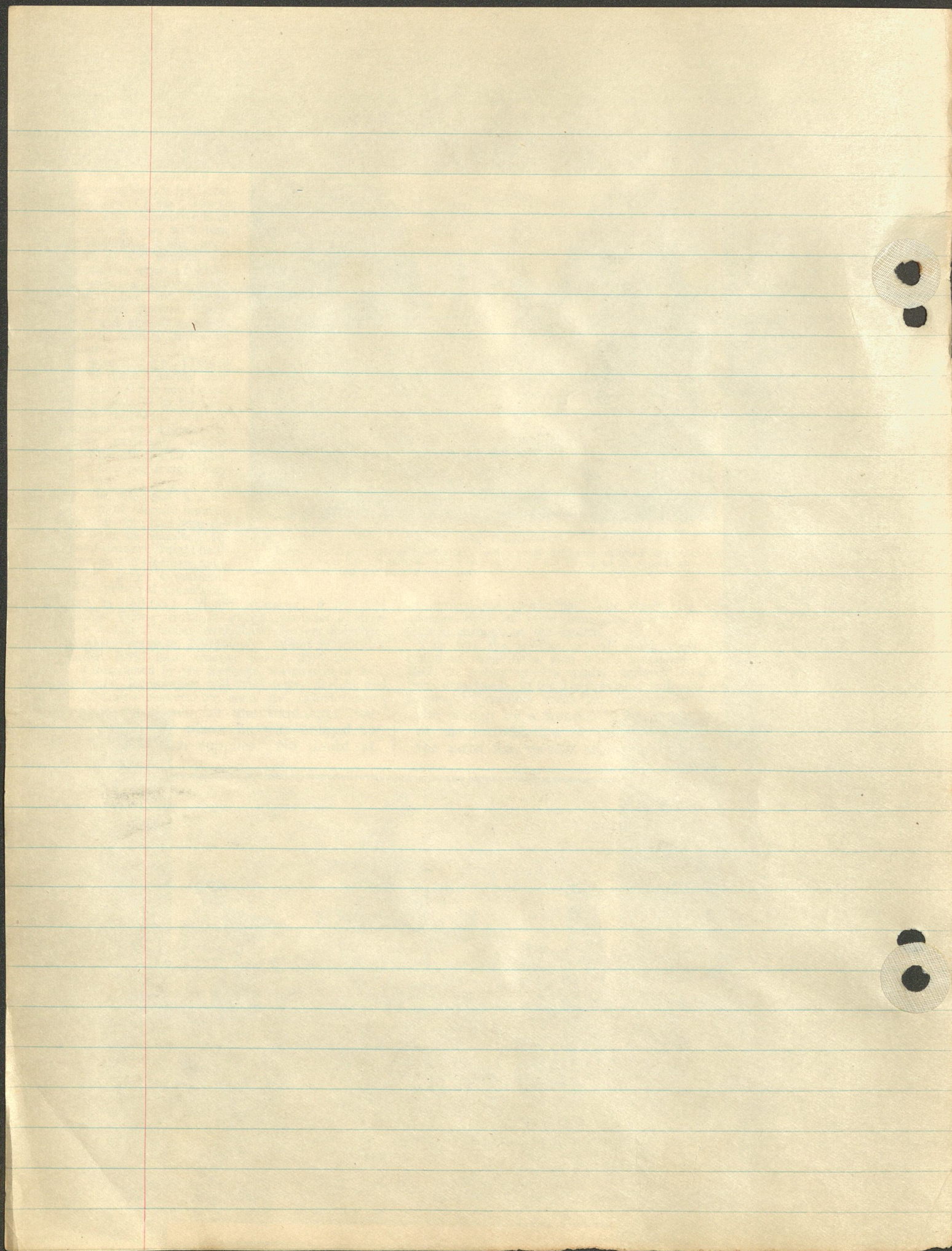
39



Courtesy]

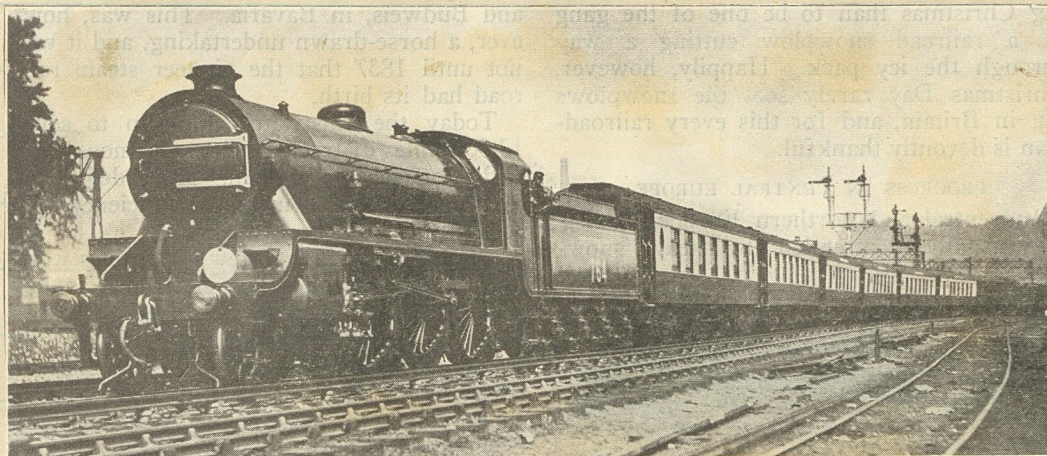
[Southern Railway

Our photograph shows the inside of an electrically operated signal cabin on the Southern Railway, such as is referred to on this page. Note the miniature levers and the illuminated route diagram above the frame



Great Britain

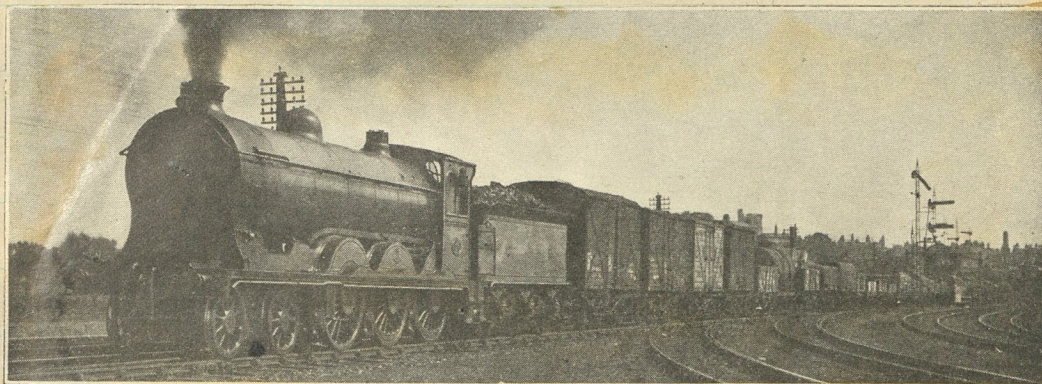
40



WHO'S FOR THE "CONTINONG"?

The 11 a. m. Dover continental Pullman leaving Victoria Terminal, London, formed the subject of a fine action photograph of which the camera man may well be proud

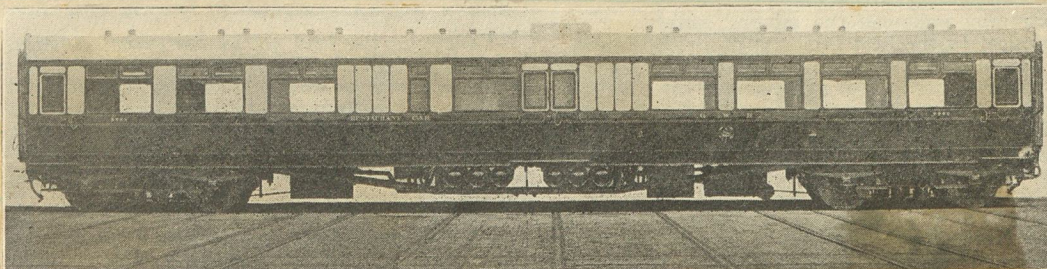
41



BRITISH FREIGHT TRAIN

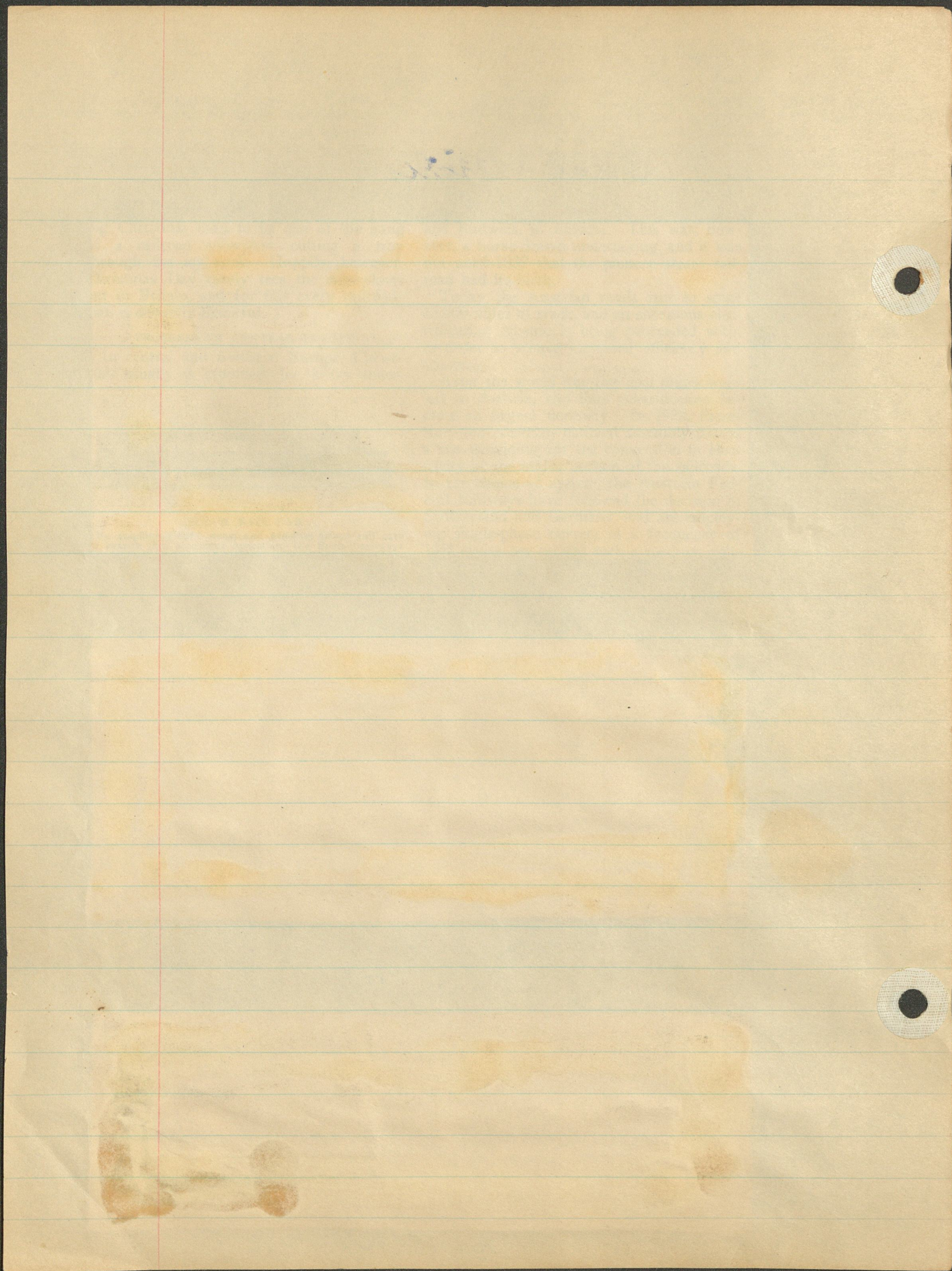
Fast schedules are a feature of British freight train operation. Above is depicted a mixed freight train leaving Glasgow for the south

42



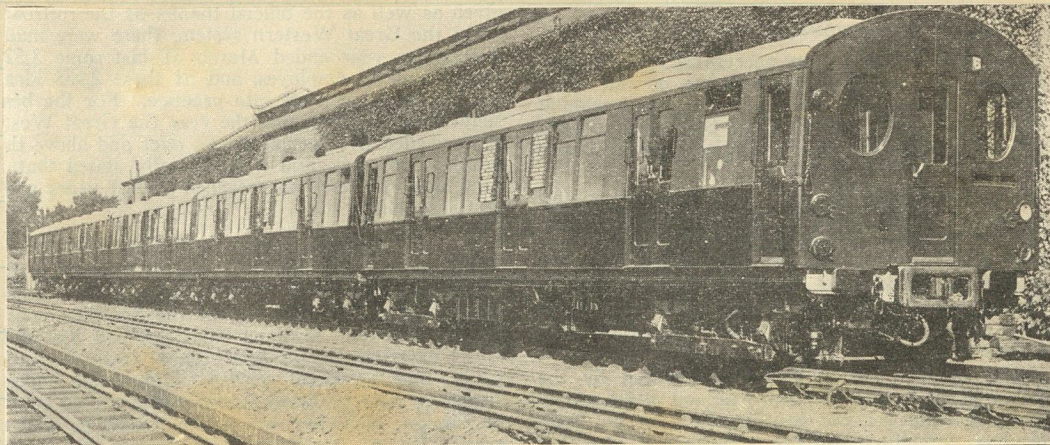
IT PROVIDES GOOD EATS

This 70-foot dining car of the Great Western road is typical of the cars providing good eats for travelers in England. Dining cars are operated on all the principal British trains, serving tip top fare at reasonable charges



Great Britain

43



FOR SILENT TRAVEL

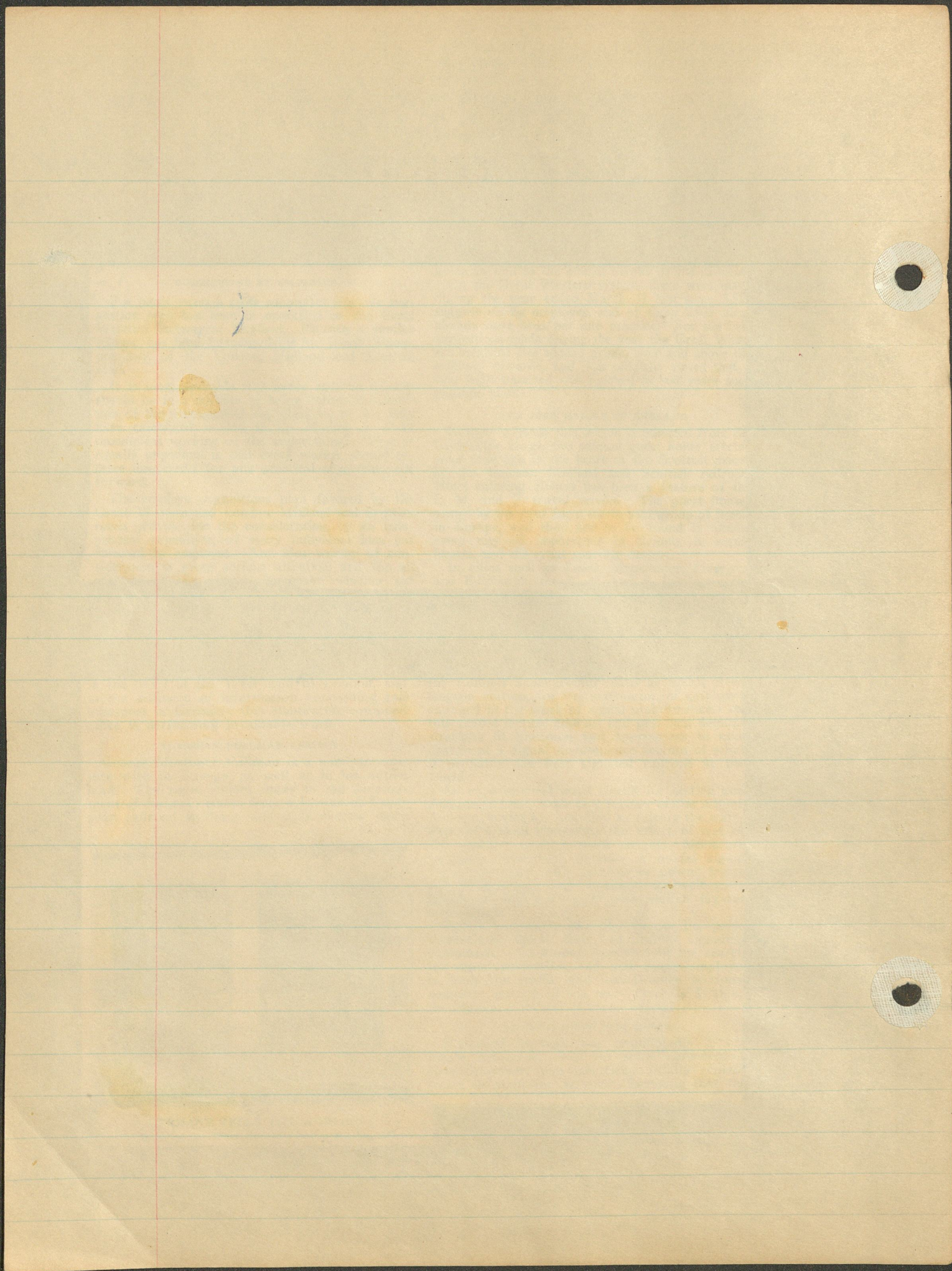
With their new decorative scheme of chocolate and grey, these modern silent-running cars add a touch of color to the underground railroads of Britain's metropolis

44



SECRET OF SAFETY

Modern signaling equipment is the prime assurance of safe working on the group railroads of Britain



Europe and Other Countries Having Railroads

Switzerland being very mountainous has many long tunnels. As electric locomotives are smokeless this is the kind used. Switzerland leads in electric mileage in Europe. Illustration 51 shows one of the electric locomotives in use in Switzerland. In illustration 47 is a steam locomotive used before the line was electrified. In Europe, especially there are a great many passenger cars built on the compartment plan.

Example
compartments

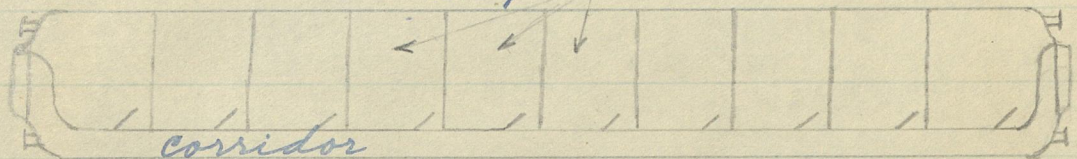
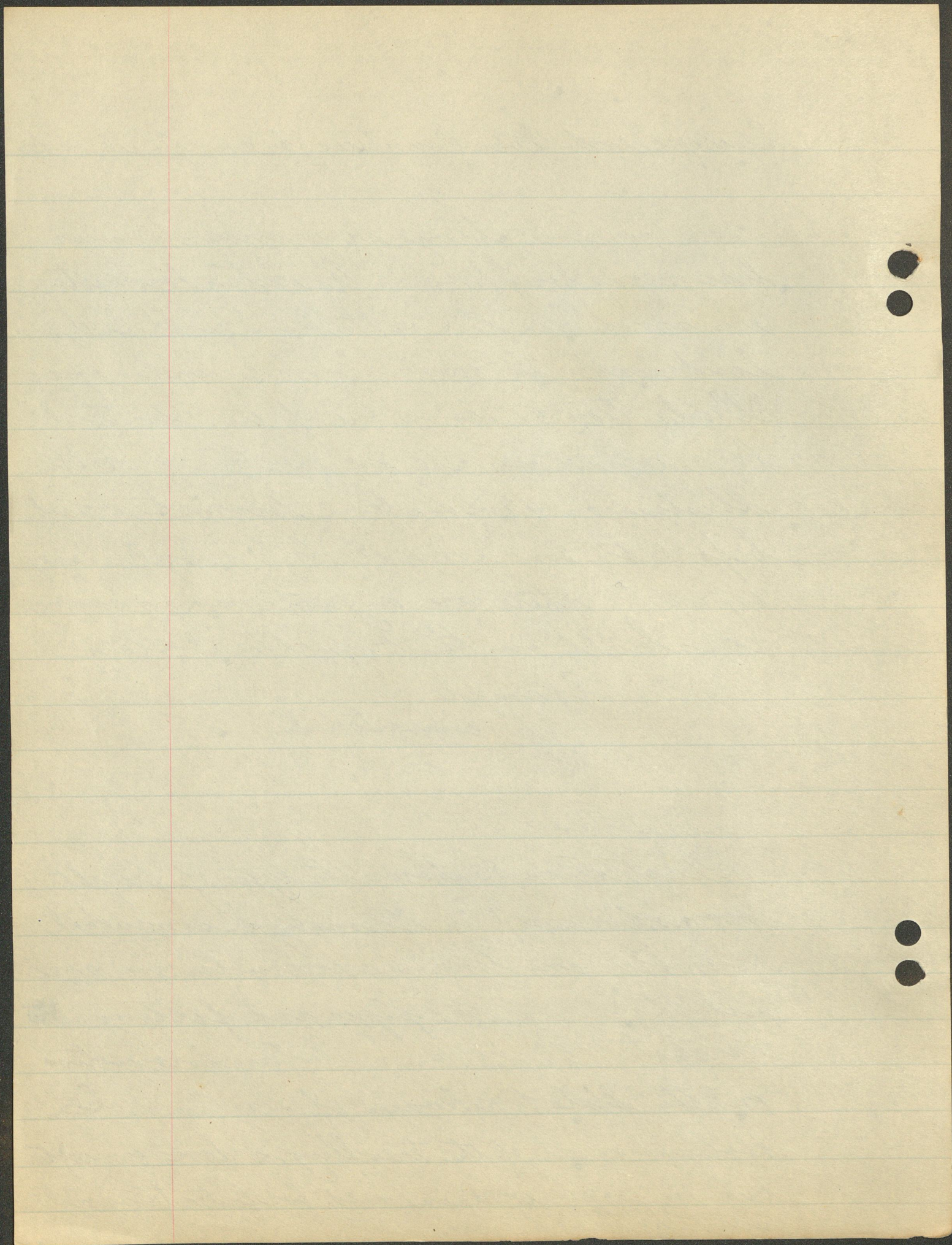
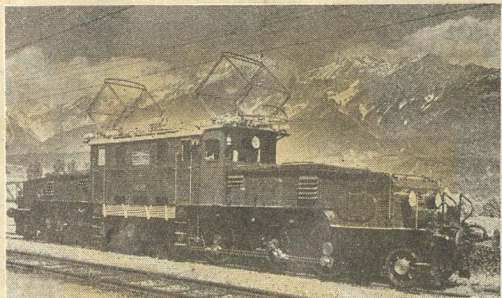


Illustration 53 shows the type of freight locomotive used in Germany. It somewhat resembles an American locomotive in size and the numerous pipes and fittings on it. Illustration 50 shows an electric locomotive on the State Railways of Holland. In Holland most of the travelling is done on water but the people were in need for faster transportation so a railroad was built.



Europe & Other Countries

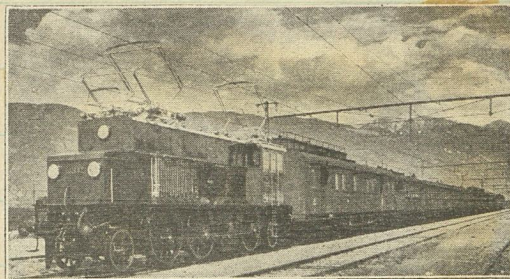
45



CHRISTMAS IN AUSTRIA

Up the Tyrolean Alps the mighty electric locomotive hauls the Christmas passenger and freight business, passing between Austria and west European points.

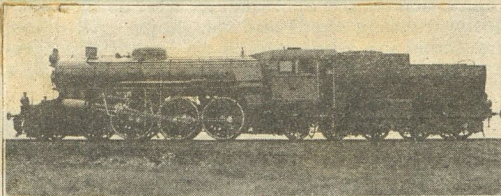
46



AUSTRIAN ELECTRIC TRAIN

Operating over the mountain tracks of the Austrian Tyrol, fast electric trains link Switzerland with Vienna by way of the Arlberg railroad.

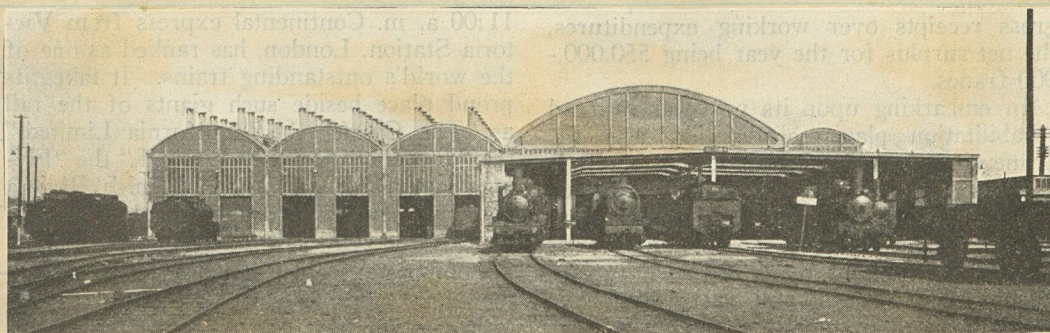
47



FAST PASSENGER LOCOMOTIVE

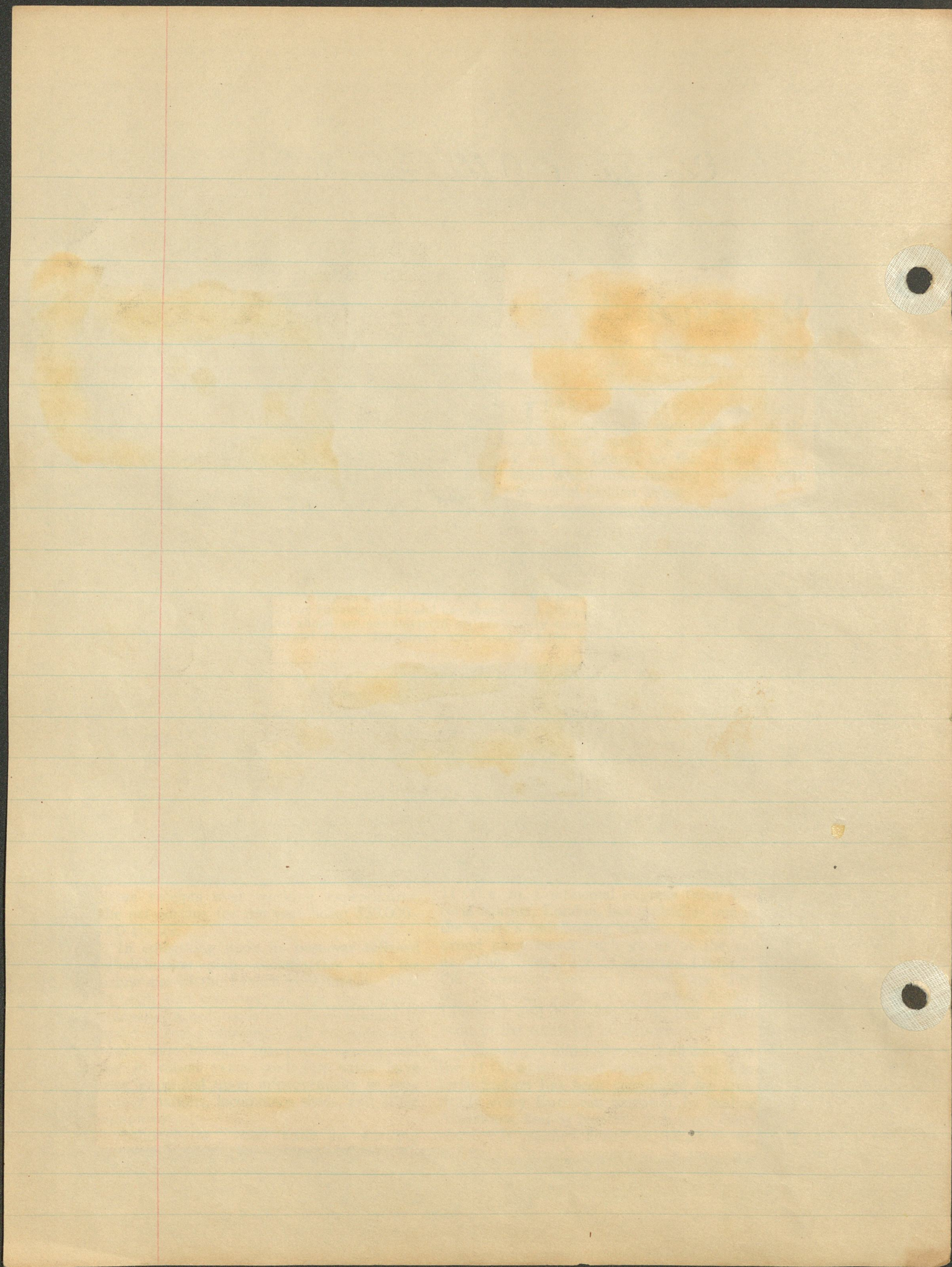
This type of locomotive of the Swedish government roads hauled fast passenger trains on the Stockholm-Gothenburg route. It now has been replaced by electric haulage over the throughout 300-mile run.

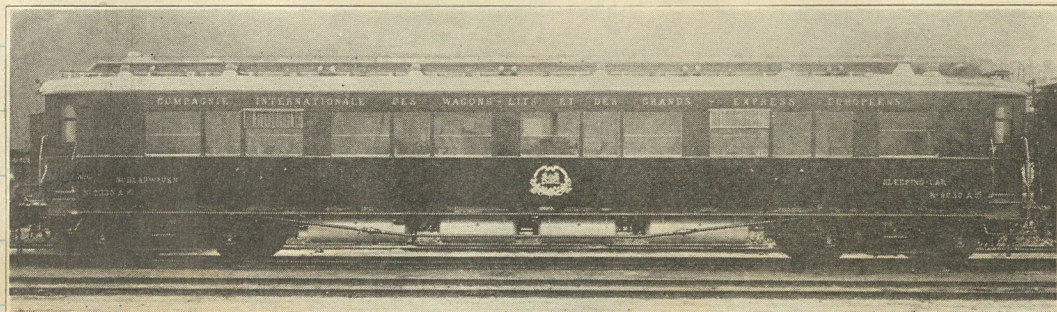
48



YOU DON'T REMEMBER THIS!

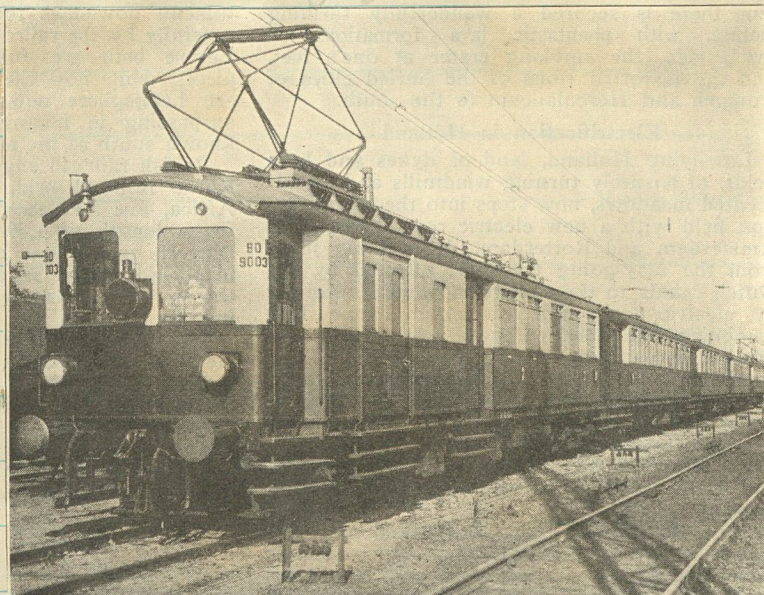
The city of Tergnier in northern France now possesses one of the finest locomotive depots found on the French Northern Railway. The structure is one of many new roundhouses included in the post-war restoration plan. The tenders of the second and fifth locomotives from the left are piled high with coal bricks, which are favored as locomotive fuel in "La Belle France."





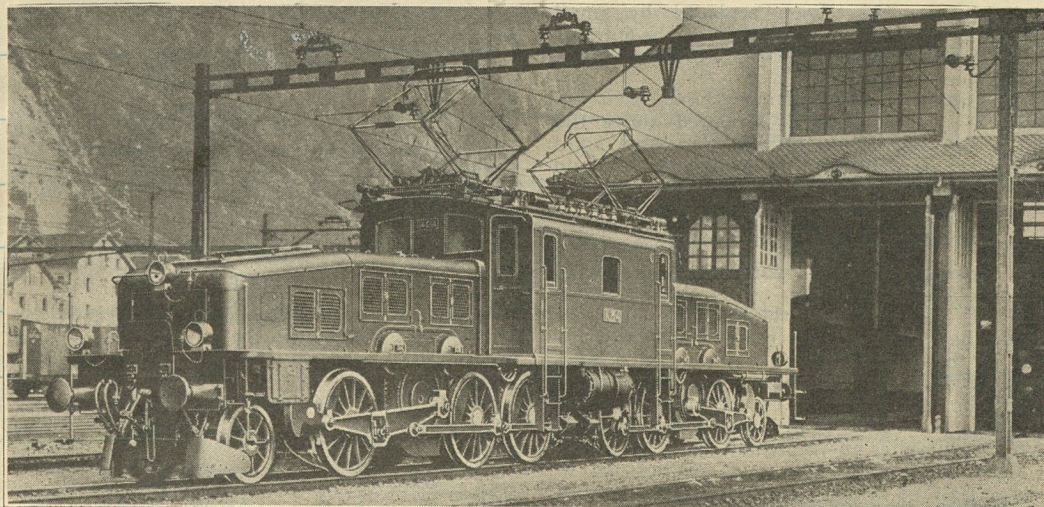
SLEEP, BABY, SLEEP!

Here's a comfy sleeping-car of the European railroads. The berths are all arranged on the compartment principle and privacy is a feature of the car's design. This is one of several cars run in the Paris-Berlin services



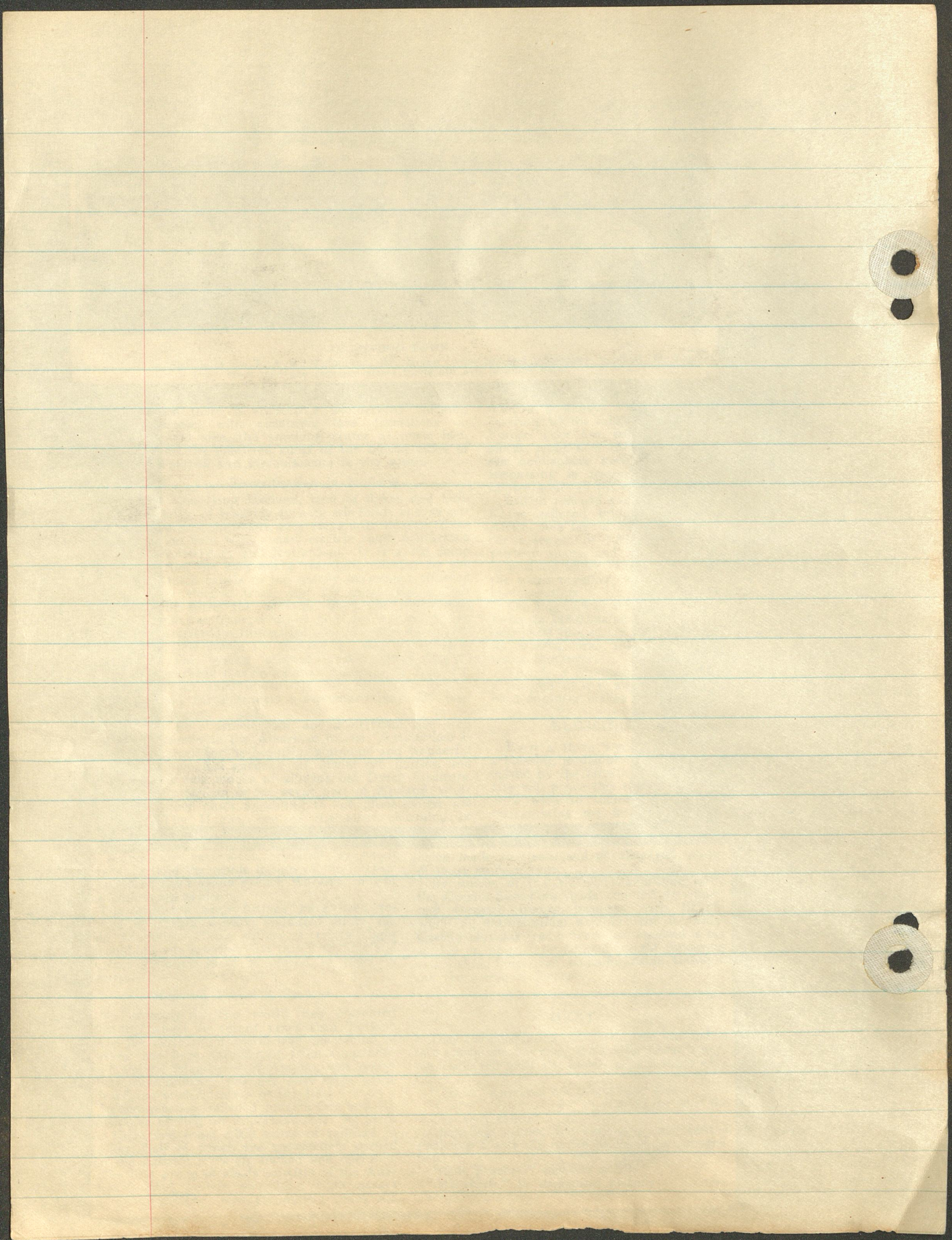
ELECTRIC TRAIN, STATE RAILWAYS OF HOLLAND

The electrification of the Dutch railroads is proceeding steadily, and the through trunk route between Amsterdam and Rotterdam recently has been converted from steam to electric traction.

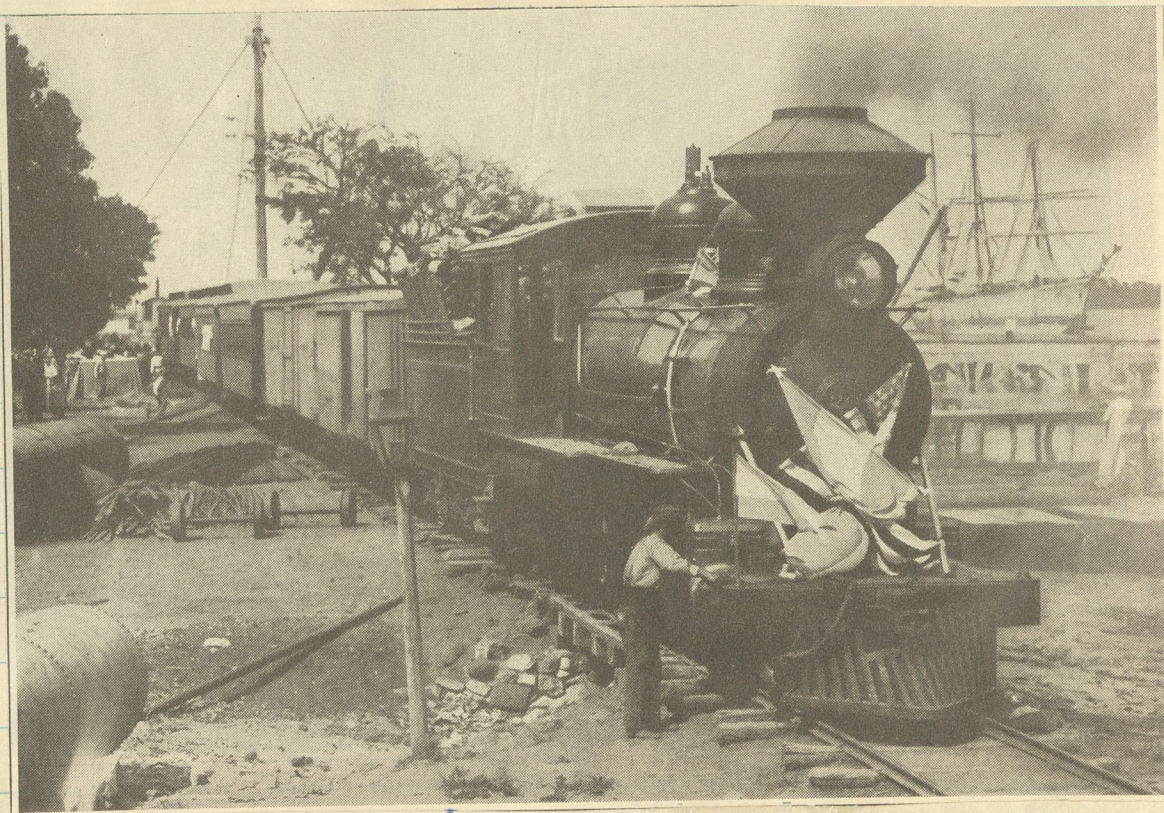


FAST PASSENGER LOCOMOTIVE OF THE ST. GOTHARD RAILWAY

Switzerland leads among all European lands in railroad electrification. Electric trains now operate right across the Alps from Switzerland's western border to Italy, and before long there will be nearly 2,000 miles of electric railroad in this picturesque European country.

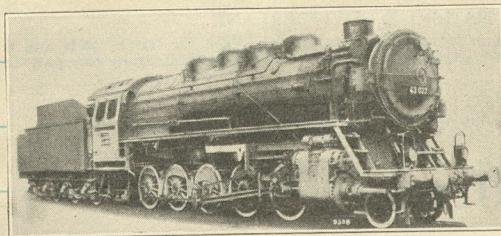


52



a railway train in Nicaragua

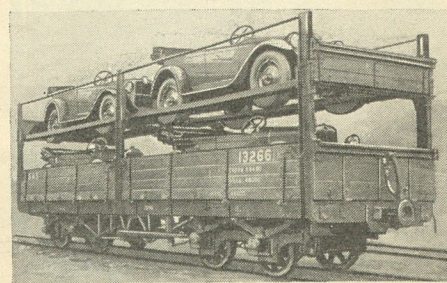
53



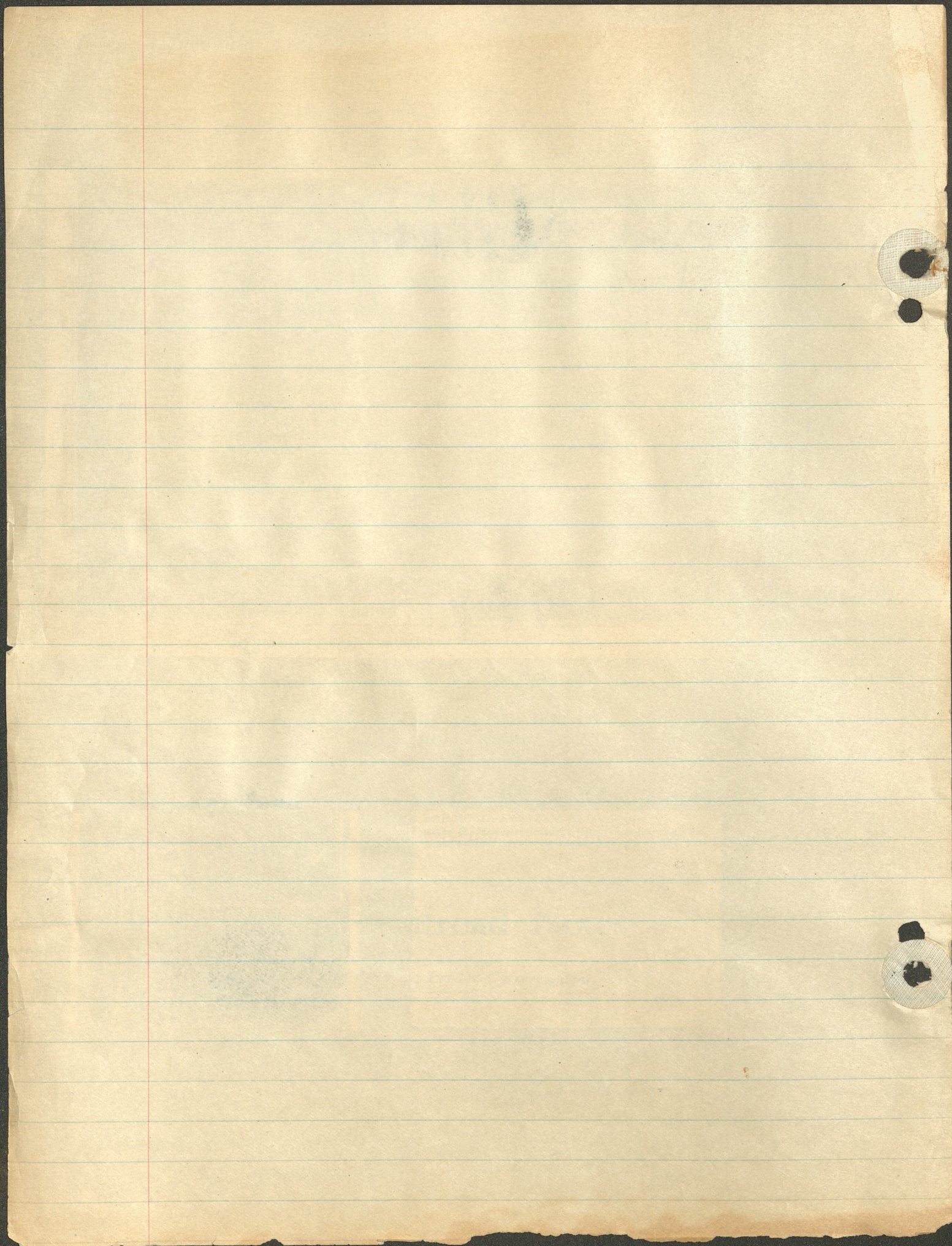
GERMANY'S LATEST LOCOMOTIVE

Standard two-cylinder Decapod freight locomotive built by the Berliner Maschinenbau A. G. (formerly L. Schwartzkopff) for the German Railway Company. This type of machine hauls heavy freight trains in the Rhine and Ruhr areas.

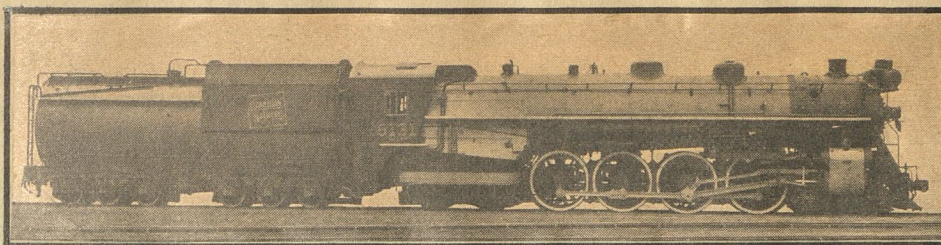
54



Safe and Rapid Delivery of Motor Cars in South Africa Is Afforded with Double-Decked Railway Units



4-8-4 OR NORTHERN TYPE



THE CANADIAN NATIONAL'S 6100 SERIES 4-8-4'S WERE THE FIRST LOCOMOTIVES OF THIS WHEEL-ARRANGEMENT.

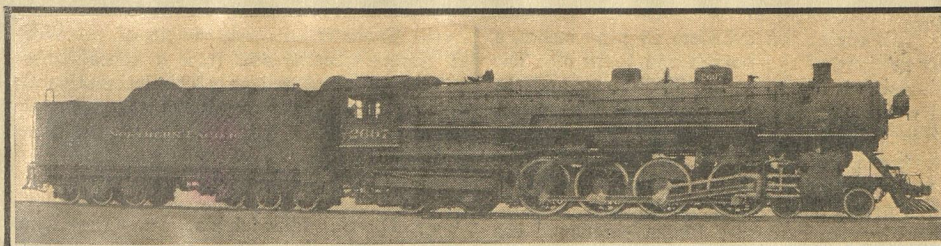
T.F. 56,800 LBS.

WEIGHT 381,900 LBS.

DRIVERS 73"

B.P. 250 LBS.

CYL. 25½" x 30"



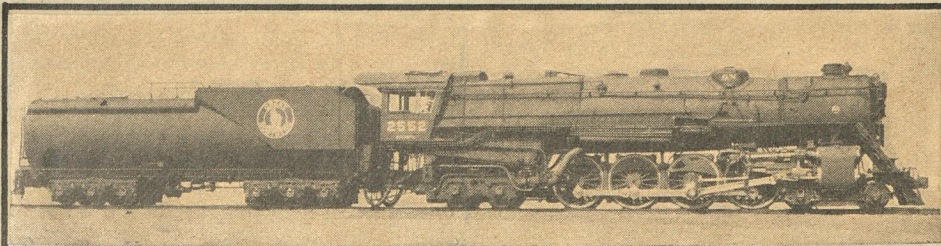
NORTHERN PACIFIC 2600 SERIES

T.F. 57,500 LBS.-W.B. 68,900 LBS. WT. 426,000 LBS.

DRIVERS 73"

B.P. 210 LBS.

CYL. 28" x 30"



GREAT NORTHERN S-1 CLASS

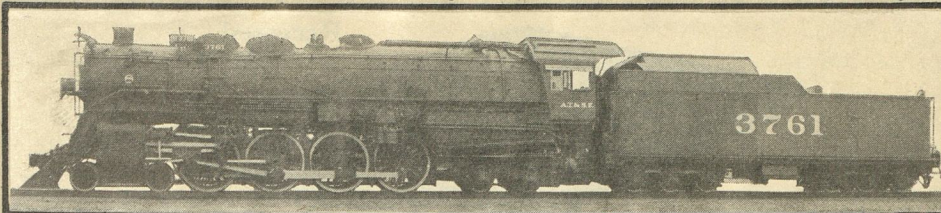
T.F. 67,000 LBS.

WEIGHT 472,000 LBS.

DRIVERS 73"

B.P. 250 LBS.

CYL. 28" x 30"



SANTA FE. 3750 SERIES

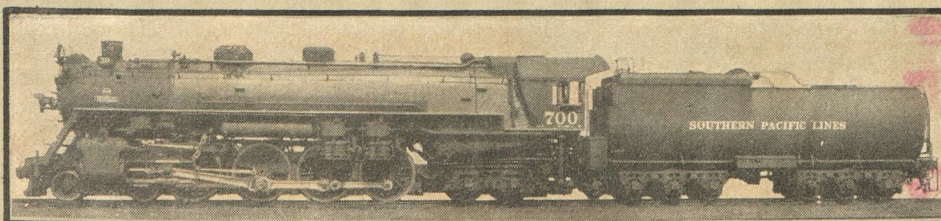
T.F. 66,000 LBS.

WEIGHT 432,240 LBS.

DRIVERS 73"

B.P. 210 LBS.

CYL. 30" x 30"



SOUTHERN PACIFIC 700 SERIES

T.F.

WEIGHT

LBS.

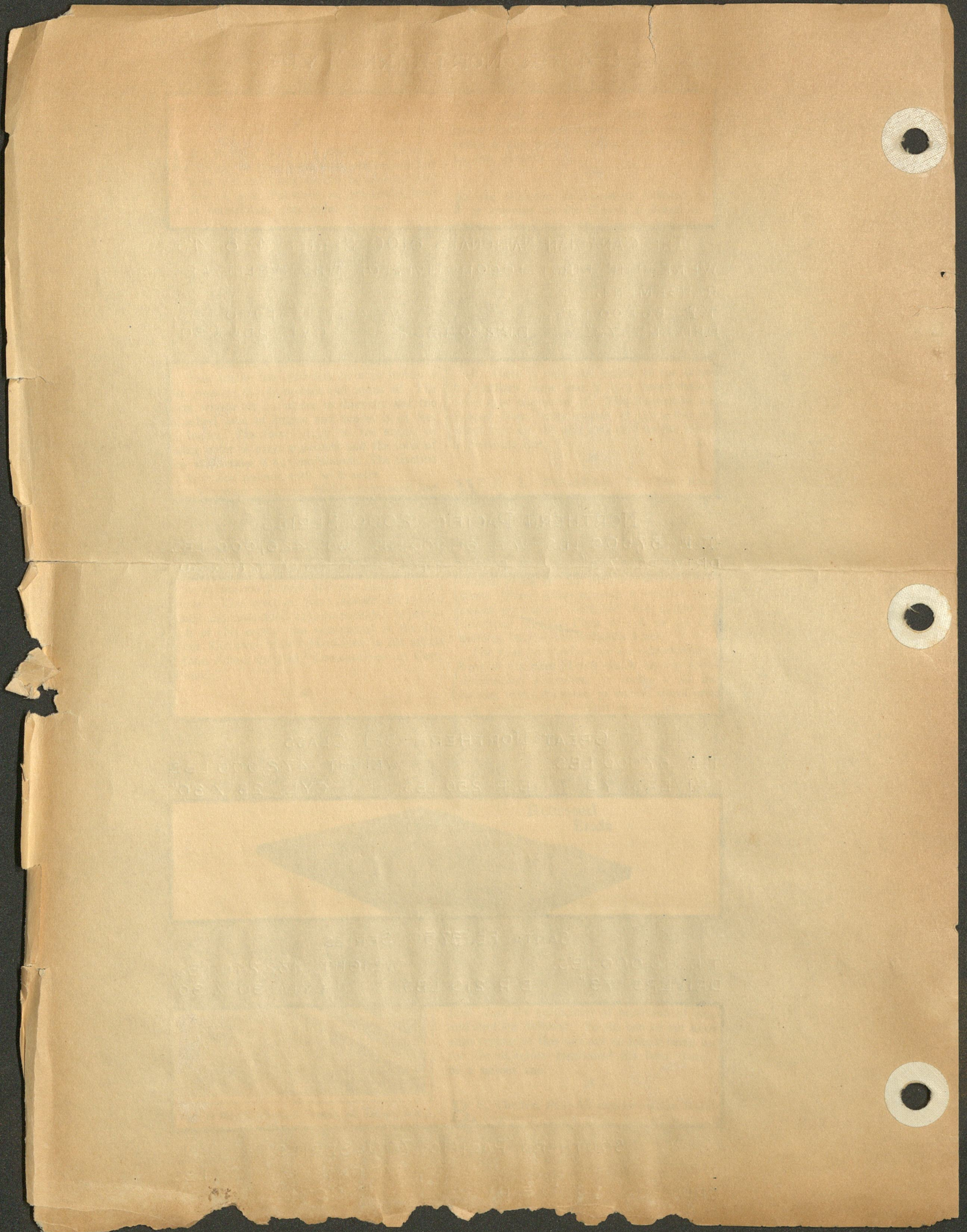
DRIVERS

73"

B.P.

CYL.

27" x 30"



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